The Builder.

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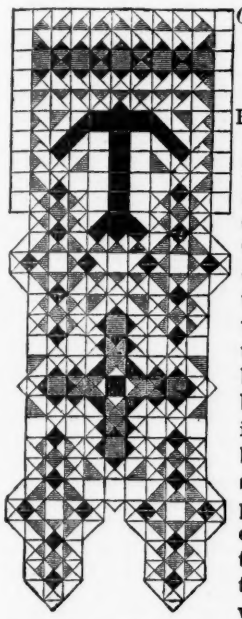


On the Proposed Works at Christ Church Cathedral, Dublin.

THE small number of the larger class of ancient buildings possessed by Ireland renders the restoration of Christ Church Cathedral, Dublin, now about to be undertaken, a work of greater importance than it would be did this building belong to a country rich in ancient and historic buildings, though at the same time the fine proportions and the delicate details of the thirteenth-century portion of this church would, even were it situated in England or France, despite its smallness, entitle it to a high place among the Mediæval buildings of these countries.

The funds for effecting this restoration have been given with great (though not in Dublin unexampled) liberality by Mr. Roe, a citizen of Dublin, who has selected Mr. Street as the architect to be employed in carrying it out. When so deservedly eminent an architect as Mr. Street is writes, "I have entered into the whole question [of the restoration of the cathedral] with no little zeal and enthusiasm, for this church has always had special attractions for me," it is to be expected that the proposals he makes will have great merits. And great merits Mr. Street's proposals for the restoration of the cathedral certainly have; indeed, the more they are examined, the more apparent becomes their very satisfactory nature, and the more clearly is seen the great reason there is for rejoicing that this restoration will take place under Mr. Street's care.

If the works proposed to be carried out at Christ Church related solely to the restoration of the cathedral, our task might be limited to the pleasant one of recommending our readers to procure the interesting and well-illustrated reports,* in which the proposed works are set forth, but this is only a part of what is in contemplation. It is intended to erect at Christ Church Cathedral a building for the use of the representative assembly or General Synod of the Irish Church, and it is on the proposals Mr. Street makes relative to this building that we feel it desirable to remark.

Mr. Roe is supplying the funds for this building, and it is to the not unnatural tendency of the public-spirited generosity he is evincing to save the scheme it is proposed to carry out through it from criticism that we must attribute what appears to have been the unquestioned acceptance of these proposals in quarters in which it was to have been expected that their nature would have subjected them to discussion. Mr. Street's scheme for the Synod Hall buildings is not one that we can support.

Christ Church Cathedral is near the eastern end of the ridge running parallel to and rising rapidly from the southern bank of the River Liffey. It is about 100 ft. to the north of the summit of this ridge, and the ground on which it stands is some 10 ft. lower than the top of the ridge, which is occupied by Christchurch-place, an important thoroughfare.

We would remark here that we regard this depression of the ground on which the cathedral stands below this street as the great defect of what is notwithstanding a noble site. The ground between the cathedral and Christchurch-place belongs to the cathedral chapter.

The instructions of the Duke of Leinster, which have resulted in Mr. Street's report of this year, requested the reporter to show "how, availing myself of the additional ground thus [by the taking down of the present choir] acquired, I would propose to provide the hall and other rooms required for the accommodation of the representative Synod of the Irish Church." The Duke of Leinster further informed Mr. Street "that it was understood a hall about 100 ft. in length and 40 ft. in breadth would be required, with division lobbies on either side."

Mr. Street has somewhat deviated from these instructions; for he has not availed himself of the ground between the ends of the existing and that of the proposed choir, and his reason for not adhering to them would appear to be that (in his own words) "there is no obtainable view of the choir, save that from the south and south-east, and it would therefore be a great mistake to shut the church out from view at all at this side, which would be the effect of any erection of buildings for the synod on the ground of the chapter at the south-east side of the cathedral." Every one will agree with the conclusion, though most people would, we should imagine, think it "a great mistake to shut the church out from view" on the south, even if the choir were fully visible from other points. If Mr. Street had allowed himself to be led on to what we think (despite certain other arguments of his) the natural conclusion of a portion of his reasoning, he would not have proposed (as he has done) to erect the Synod Hall on the western portion of the ground south of the cathedral, abutting against and at right angles to this building, and to complete the group of buildings for the use of the General Synod by a building abutting against the end of the southern transept and parallel to the Hall, and by another joining these two buildings together at their southern ends, and itself parallel to the axis of the cathedral.

The making of such a proposal by Mr. Street ought not, perhaps, to be a matter of surprise, for it appears in accordance with the views he has always vigorously advocated with a trenchant pen and a powerful pencil, though it must be said of him, that in making it he has shown "the courage of his opinions." But we believe that no other architect of equal eminence would have ventured on proposing the erection of such a group of buildings in the same position. Mr. Street has evidently seen that his proposals would not meet with general acceptance, for he has entered into an anticipatory defence of them, the arguments of which we believe to admit of refutation. We shall not, however, enter into an examination of these arguments, for we believe we can, by a shorter method, establish the objectionable nature of these proposals.

Had the disestablishment of the church taken place, not in Ireland, but in England, and had this event been followed by the constitution of such a representative assembly as the General Synod of the Irish Church, it would probably be necessary to erect a building in London for the use of this body. Would any one venture to propose that this want should be met by the erection of a hall as long, wider, and nearly as high as the nave of Westminster Abbey, and abutting against, and at right angles to, the northern side of the Abbey, at its western end, and of buildings containing the necessary committee and other rooms, one parallel to this hall, and abutting against the end of the northern transept, and the other parallel to the axis of the Abbey, and joining the northern ends of the hall and of the building parallel to it, these three buildings and the nave of the Abbey enclosing a courtyard? We think no one would make such a proposal, and we are quite sure that, if made, it would be rejected with moral unanimity.* Now, the objections to what Mr. Street proposes to do at Christ Church are, at least, as strong as those against such a proposal relative to Westminster Abbey would be; and we think the proposal to erect the buildings for the General Synod on the site Mr. Street has selected should be abandoned.

We think, too, that, leaving out of question the injury to the cathedral which would result from putting the ground to the south of the cathedral to the use proposed, and regarding the matter solely in reference to the contemplated buildings for the General Synod, this site is not the one on which they ought to be erected, and that its selection has injuriously affected the designs Mr. Street has prepared for them.

The Synod Hall in Mr. Street's design is a somewhat modified reproduction of that of the Central Hall in his design for the Law Courts on the Thames Embankment site, with the walls reduced to about half the height of those in the original design. The chief differences between the (upper) part of the hall of the Law Courts and that for the Synod are the far less ornate character of the windows in the latter and the omission in it of the louvres which break what would otherwise be the monotonous sky-line of the Law Courts' hall, and of the elaborate parapet which surmounts the cornice (in the design) of this building. The omission of these features on a building the height of the roof of which is equal to that of the walls which support it, must have an unfortunate effect on its appearance, for on such a building they are more needed than on one having the height of the Law Courts' central hall. The probable reason for their omission is that the Synod Hall buildings would, when the whole group was looked at from several points of view, appear a more important building than the cathedral; and the architect, knowing this to be the case, abstained from adding anything not absolutely necessary to his designs which would increase this effect, even though they would have the best result on the building which would be his own creation, and the omitted features are of this kind. The objectionable equality between the heights of the walls and the roof of the Synod Hall might be done away with by the adoption of a roof with a less steep pitch than that in Mr. Street's design; but this would have had an injurious effect on the south (a gabled) elevation; and as this is, from the nature of the streets they respectively face, a more important elevation than the western, we think Mr. Street right in using the pitch he has. The one remaining expedient which would render the western elevation of the Synod Hall satis-

* Report to the Dean and Chapter of Christ Church Cathedral, Dublin, on the Restoration of the Cathedral Church. By George Edmund Street, A.R.A. Dublin: Hodges, Smith, & Foster. 1868.
Report on the Rebuilding of the Choir of Christ Church Cathedral, Dublin, and on the Erection of a Synod Hall for the Church of Ireland. By George Edmund Street, A.R.A. Dublin: Hodges, Smith, & Foster. 1871.

* It may, perhaps, be said that it is the way in which such a pile of buildings would interfere with the roadway formed by the Broad Sanctuary which would prevent any one from proposing its erection. We, however, hold that if the position of the Broad Sanctuary was such that the erection of such a pile could take place without interfering with the roadway, the injurious effect it would have on the Abbey would forbid its being thought of. Or we might put the matter thus:—The group of buildings proposed to be erected at Christ Church could, without interference with the Broad Sanctuary, be erected on the ground to the north of Westminster Abbey; and its erection in this position would, because this church is far larger than Christ's Church Cathedral, be much less objectionable than the placing it against the latter building. Is it possible to believe it would be permitted? We are certain it would not.

factory is the placing of the committee and other rooms under it, and thus making the building abutting against the cathedral a two-storied instead of a one-storied building; and this is even less admissible than giving the hall louvres and a parapet would be, and is so for reasons similar to those given against the use of these features.

There are besides other reasons which render the elevation of the Synod Hall on a ground-floor, if erected on this site, open to objection; but these we need not go into. We may say here, however, that we regard the placing of the committee and other rooms in a floor underneath the Synod Hall as a most convenient and desirable arrangement, and consequently that the impossibility of so placing them, if this building were erected on it, would be a strong objection to any site.

The area available in Mr. Street's design for rooms for committees, for writing, and for similar purposes, would appear to be about 1,700 square feet, and any increase of this area by either a lateral or a vertical addition to the buildings he proposes is out of the question. Now, we think the area necessary to supply accommodation of this sort required (put at the lowest possible figure) is some 1,000 square feet greater than this amount. To show the limited accommodation given in Mr. Street's design we shall state the dimensions of the refreshment-room. These are,—length, 18 ft.; breadth, 11 ft. giving 198 square feet as the area of a refreshment-room of a body consisting of 624 members, in a building to be situated too in a neighbourhood without hotels.

We think, then, that not only has the selection of this site had an injurious effect on the designs actually prepared for the Synod Hall, but also that this was inevitable; and that, to enable the architect to produce a design which will be worthy of his deserved eminence, and afford proper accommodation to the General Synod, as well as to save the cathedral from great injury, all idea of erecting the Synod Hall on this site should be given up

The question now arises to which we may fairly be expected to give an answer,—"What, then, is the proper site for the Synod Hall?"

In an article in our professional contemporary, the *Irish Builder*, of the 1st inst., three positions are pointed to, as affording possible sites for this building. One of these is described in this article thus:—

"The first and best of these sites is that extending from the eastern end of the cathedral (as proposed to be restored) to Fishamble-street. The merits of this site need not be dwelt on at length; but it may be remarked that the erection of the Synod Hall, as designed by Mr. Street, on it, would scarcely, if at all, interfere with the views which will be obtainable of the eastern end of the restored cathedral, whilst the whole mass of the latter building, being opposed to that of the Synod Hall, would dominate it. Neither of these buildings obscuring or hiding the other, the dignity and apparent magnitude of the group they would form would be greater than would result from any other disposition of the Synod Hall, and the latter building would have the great advantage of having a southern aspect to its length."

Now we will at once admit that we have no fear that the erection on this site of the Synod Hall, as designed by Mr. Street, would result in any injurious effect to the cathedral. We think, too, that were the Synod Hall to be erected on this site, the roof might be one of a less steep pitch than that in Mr. Street's design, and consequently have what would be its southern and most important elevation much improved. And it is possible, too, that if the Synod Hall were erected on this site, its roof might be allowed to receive louvres, and its cornice be surmounted by a parapet. It will thus be seen that we believe this site to be free from the gravest of those objections which make us advocate the abandonment of that Mr. Street has selected; and we think, were there not a better site, that the money which this site would cost would be well spent. But we cannot regard it as the "best" of the sites pointed out, for we believe the second of these to be the one which merits this appellation.

As we have already stated, we think that the Synod Hall should have a ground floor under it. It will not be questioned that every increase of height which a building receives (so long as this is not made disproportionate to its other dimensions) has a favourable effect on its elevation, and it will be allowed to be very desirable that a building such as that which is required for the General Synod should be as imposing as possible, showing superior to the trade buildings in its neighbourhood; and the more its height is made to exceed their height, the more it is likely to do this.

We thus think the principle in accordance with which the accommodation to be given by such a building as this for the use of the general synod (at least when it is situated in the centre of a city) should be provided, is that of concentration in a horizontal direction and extension in the vertical, considerations of convenience, of course, preventing an undue following of this principle. As the rooms for committee and other purposes would be quite as conveniently situated if placed in a ground-floor under the Synod Hall as in buildings adjacent to it, we would, in accordance with this principle, so place them. The provision of division-lobbies by aisle-like appendages to the Synod Hall must result in making it closely resemble the typical Gothic church, and anything which would reduce this effect would have a desirable result on the appearance of the building. The placing of the Synod Hall on a ground floor would do so to a considerable degree, and it would therefore be specially desirable to so place it if the division-lobbies should be thus provided.

But, we think that, if erected on the site at the eastern end of the cathedral, the Synod Hall could not conveniently have a ground floor under it; but our limits will not permit us to enter on the reasons on which this opinion is based. Thus we regard this site as subject to this most serious drawback.

There is another disadvantage in this site, which it has, too, in common with that Mr. Street has selected, and, indeed, in common with any site the erection on which of the buildings for the General Synod would result in those buildings and the cathedral forming one connected mass of buildings. The building for the General Synod, if placed on such a site, would have to be built of the same stone as the exterior of the cathedral, and a worse material it would be difficult to find, the use of which in the higher class of the intramural architecture of Dublin has been quite given up. But undesirable as is the erection of the Synod Hall buildings in the stone with which Christ Church is faced, the adoption of a superior material would probably be thought out of the question should these buildings be placed in contact with the cathedral.

Must they be so placed? We think not. The action of the General Synod at its recent meeting in settling that Christ Church is to be the cathedral of the diocese of Dublin has prevented the possibility of the existence of what would be the strongest reason for so placing them, that is, the erection of Christ Church into the national cathedral or minster of the Irish Church. There does not appear now any very particular reason why these buildings should be erected so as to form one group with Christ Church Cathedral, and certainly there is none sufficiently strong to counterbalance the objections to adopting this course.

The second of the sites which have been suggested is on the western side of St. Michael's Hill. On this side of this street there is an "insula," or area completely surrounded by streets, the greater part of which is in the hands of the Church. It has been said that the whole of the part of this area not belonging to the Irish Church would require to be purchased to allow of the erection of the buildings for the General Synod on this site. But the placing of committee and other rooms under the Synod Hall would render it unnecessary to cover the whole of this area with the buildings for the General Synod, and in reality a small addition to the ground owned by the Church would permit of the erection of these buildings on this site.*

The upper portion of this site is at the top of the ridge already alluded to, and the ground falls rapidly to the north (or along St. Michael's Hill). The main entrance to the buildings for the General Synod, erected on this site, would naturally be at the south end; and the elevation of the Synod Hall some 7 ft. above the level of the street (High-street) into which this entrance would open is not liable to objection, as requiring an inconvenient ascent to reach it. If the Synod Hall were built at this level, the floor underneath it would be perfectly well suited for the committee and other rooms required.

A building on this site might be made, too, the occasion of affording Mr. Street an opportunity of giving Dublin a tower of his creation; and this, we think, is an architectural feature he is specially skilful in designing.

We would suggest, then, that the trustees charged with the restoration of Christ Church Cathedral and the erection of the building for the General Synod should obtain from Mr. Street sketches of designs of the latter building to be erected on the site to the west of St. Michael's Hill. The preparation of such sketches as would enable them to arrive at a proper judgment as to whether for a site free from injurious conditions he could not furnish a design far superior to that he has produced, would not be a great labour to Mr. Street, and considering the importance of the building, we think that the labour, be it great or small, should be undertaken. We are certain that the injurious effect which the erection on the site intended of the buildings for the General Synod would have on the cathedral renders it incumbent on those who have the power to forbid their being so.

We would always prefer to enforce a recommendation by Mr. Street than to oppose it, but a strong sense of duty compels us on the present occasion to take the latter course.

* The church accommodation in the neighbourhood of Christ Church is superabundant, so that St. Michael's Church, if removed, would not be missed. The body of this church is modern, but the ancient tower still stands. There are, however, several others as old and of the same general character in Dublin.

THE STORY OF THE NORTH AMERICAN FISHERIES.*

WITHOUT doubt, and beyond comparison, the fisheries of British North America are the most extensive and the most profitable in the world. The mighty lakes and noble rivers abound with almost every description of fresh-water fish; and in the Gulf of St. Lawrence, those fishes which are of the greatest importance and commercial value to man, literally swarm, not only affording nutritious and wholesome food, but leading to profitable employment. Those fisheries may be prosecuted in the open waters of the Gulf, as within every bay, harbour, creek, cove, and inlet in connexion with it; whether on the bleak and sterile coast of Labrador, or on the western shores of Newfoundland and Cape Breton, or along the eastern coasts of Nova Scotia and New Brunswick, or within the Bay of Chaleur or around Prince Edward's Island, Anticostia, or the Magdalen Islands, the fisherman may pursue his labours with nearly equal chances of success, and the full prospect of securing an ample reward for his toil. 75,000 men and boys, and 15,000 vessels and boats belonging to the several provinces, are annually employed, and from 10,000,000 to 12,000,000 dollars' worth of fish is taken; yet it is surprising that those fisheries are prosecuted to a greater extent, and with more profit, by the French and Americans, than by the inhabitants of the Dominion and of the colonies to whom they rightfully belong. The French exercise an almost exclusive right of fishing on the western coast of Newfoundland, while 600 to 800 American vessels annually enter the Gulf of St. Lawrence, and scattering over the whole of its wide extent, with little heed of the limits to which they are restricted by treaty, pursue their business and take away full and valuable fares, amounting in the aggregate to 8 or 10 millions of dollars' worth. Merchants from Jersey also prosecute those fisheries with great enterprise and profit, and have established permanent fishing stations in Gaspe, Labrador, Newfoundland, and New Brunswick; but they by no means confine themselves to any particular locality: they employ upwards of 100 vessels almost exclusively in carrying the rich products of the deep to various foreign markets, besides the smaller craft required upon the coast. As a matter of commerce, the inland fisheries are not of so much importance, although about 200,000 dollars' worth of fish is taken in the lakes and rivers of Ontario, which still, as of old, supply the wants of many a white and Indian fisher, and excellent sport for the disciples of Izaak Walton. Heretofore in all those waters there was an abundance of white fish,—bass, trout, pike, perch, and various other kinds; but the navigation of the lakes and the erection of mill-dams and other obstructions on the rivers and streams, together with the adoption of destructive modes of fishing, has very much reduced their numbers: still stringent fishery laws and fish-breeding establishments on Lake Ontario, it is considered, will soon make them plentiful. The most valuable fisheries of the Gulf are those for herring, cod, and mackerel. The herring appears about

* The importance of this subject at the present moment will secure attention for the following paper. The information it contains has been collected for us carefully on the spot.

the end of April, and the fishing continues until the middle of June, when they retire to deep water, having deposited their spawn there. Spring herrings are very thin and poor, because they are taken in the very act of spawning in set nets, or with large seines, which often require from fifteen to thirty men to manage, who take from 200 to 1,000 barrels at a single haul. When salted, these herrings diminish in size and become insipid; consequently what are required for local consumption are used fresh, and the rest applied to the land as manure, by which the most abundant crops are raised. But another herring appears on the coast about the 20th of August, and remains for a month, which is very fat, excellent for food, and profitable for exportation. The mackerel, which is found in vast shoals along the whole shores of the Gulf, from the 1st of July until the end of September, is taken in seines and large drift-nets, that hang down in the water at night, when the fish, rushing against them, in the dark, pass their heads and gills through the meshes, and are held there until the nets are drawn up. The mackerel is one of the chief objects of pursuit with American vessels, who fish with a line,—a mode that is called trailing. If no fish is in sight when the fisher reaches some favourite resort, he furls all sail except the mainsail, and brings his craft to the wind, when, to attract the fish, he throws bait overboard,—usually small mackerel, or salt herring, cut up very small with a machine. If he succeeds in attracting them to the surface of the water, they are easily caught in large quantities, when they are dressed and thrown into casks of water to rid them of the blood, after which they are salted, and put into barrels. All over the Gulf of St. Lawrence the cod-fishing commences about the beginning of June, and continues until the end of November, and is chiefly prosecuted in boats built by the fishermen, with fore and aft sails and a jib. They are furnished with a small oven for cooking, a compass, oars, anchors, and hook-lines, from 30 to 40 fathoms long, which are baited with capline, herring, or mackerel. The crew are usually two men and a boy, who go from 1 mile to 15 miles in the morning; and when far out, they seldom return until the next evening, and then run alongside a jetty, upon which the fish are thrown. The heads are then cut off, and the entrails taken out, the liver only being preserved to make oil. They are then split, and the backbone taken out, when the fish is washed and rubbed with salt, in which they remain for six or eight days, when they are again washed, and put to dry upon the beach for about three weeks, being frequently turned, to prevent them from being sunburnt. When properly cured, they are built into small cones, about 3 ft. high, with the tail outwards, and covered with birch-bark, where they are left to season, before being packed for exportation. For the deep-sea fisheries large schooners, of from 70 to 83 tons, are employed, which generally carry six or eight boats, and a crew of fifteen to twenty-five men. When the vessel anchors in some snug harbour, two men put out in each boat to fish, and if the take is good they bring two boat-loads a day, which are carried ashore and cured for market; but the crews of the United States vessels often salt the fish on board, and dry them when they go home, and by that means make two or three trips during the season. A quintal,—112 lb. of dried fish or 252 lb. of green fish,—washed and drained, is considered a good day's fishing, and a schooner's cargo will average from 450 to 600 barrels. The French vessels on the coast of Newfoundland, which are from 150 to 300 tons burden, fish with long sea-lines, to which short lines, with hooks and baits, are attached; they are left down all night, and when lifted in the morning will often contain 400 or 500 large fish. Haddock, hake, and turc are also taken and cured in the same manner, but being of inferior quality they only sell at half the price of cod. The salmon of the Gulf, which are noted for their fine flavour, are caught in large stake-nets placed at the mouths of rivers which enter into the bays and harbours. They are split and salted in large tubs, and afterwards packed in tierces of 200 lb. each. A good deal is put up fresh in tins, and many fish are dried and smoked, but where carriage is convenient a great deal is packed in snow or ice, and sent to the Canadian or the United States markets. Years ago this fine fish was very abundant in all the rivers leading into the gulf, but modes of fishing which destroyed the young while taking the old fish, and the obstructions of weirs and mill-dams without any provisions for the fish to pass up them to their spawning-grounds, have diminished their numbers, and to such an extent that only for the protection lately given to them by the Government those fisheries would be completely destroyed. Various other kinds of fish besides those enumerated are also taken in the Gulf, and shell-fish, such as oysters, crabs, and lobsters, are to be found in unlimited quantities. The latter are found everywhere upon the coast, and are largely used to manure the land about the Bay of Chaleur. Carts are driven down to the beach at low-water, and are readily filled with lobsters left in the pools by the recession of the tide. Large quantities are put up in tins at several places, which need only be restricted by the demand. The people of the fishing villages take them with small hoop-nets, and sell them for abont 50 cents per hundred, and at that price a fisherman can earn 1*l.* in the twenty-four hours. Those mighty animals of the deep, which are only caught for the value of their skins and the oil extracted from their bodies, are also abundant in those British North American waters. The seals, which go on to the ice to bring forth their young, are floated down to the Gulf when it breaks up; then large herds are found together on the floating ice, which are called seal-meadows. The hunters often surprise them while sleeping, and then despatch the young with bludgeons; but the old ones, which frequently turn and make resistance, they are obliged to shoot. At Labrador they are caught with strong nets across such channels as they are in the habit of passing; but at Newfoundland, Anticostia, the Magdalen Islands, and other parts of the Gulf, large schooners, of about 80 tons, manned by about thirty men, are employed to hunt for them, which, notwithstanding its dangerous nature, the pursuit is eagerly entered into by the hardy hunters. Large quantities of oil are made from the flesh of these animals, and the skins are sold, the smaller ones for 50 cents each, and the larger ones for 80 cents. Porpoises are not so plentiful now in the St. Lawrence as they have been; still, many are caught in fisheries set for the purpose, into which they run while in pursuit of the smaller fish in-shore. Oil is extracted from the flesh, and a very useful leather is made from the skin. The hump-backed whale is also captured in the Gulf by the fishermen of Gaspe and Newfoundland, where large schooners are fitted up for whaling, the oil, bones, &c., of which constitute an important branch of commerce. Thus in every part of these British North American waters there are mines of wealth, more prolific and more valuable than in all the gold-fields of Australia and California, and resources of food that are well-nigh inexhaustible, which, if developed with enterprise and energy, will be fully equal to the wants of any population this dominion can maintain upon its surface. No doubt much of the coast is rough, uninviting, and very unfit for agriculture, more especially on the Northern Shore from the Saugeney to the Straits of Belle Isle, along the coast of Labrador, where the people, chiefly of French descent, very thinly scattered upon it, never attempt to till the land, but live upon the products of the fisheries, which some years bring them full and plenty that they exchange at the fishing-stations, or with schooners calling for necessary articles of food and clothing; but during seasons when the fish, for some cause or other, fail to visit that part of the coast, they are often in great distress and dependent on the Government bounty. Along the south shore of the St. Lawrence from Point Lewis, opposite to Quebec, to Gaspe, the Land's End, and around the Bay of Chaleur, the inhabitants are chiefly French; but as the land is good in many places, they combine fishing with farming, which enables many to live in comfort. From the Bay of Chaleur to Miramachi, around Prince Edward's Island, Nova Scotia, and to Halifax and St. John's, the people descended from English, Scotch, and Irish, make a good living by building ships, catching fish, and cultivating the lands of New Brunswick and Prince Edward's Island, which in some parts are fertile, and by digging coal and iron in Nova Scotia, where these are to be found in great abundance. The inhabitants of the Magdalen Islands and of Anticostia are Acadian French; but the hardy Newfoundlanders, tall and active, are mainly of Western Irish origin. Like all the fishermen of the world, except the Yankees, who make shoes and locomotives as well as catch fish, those British North Americans, although brave and adventurous, are simple-minded, and easily imposed upon by the traders on the coast. Many families who can equip and man a schooner, or those who work on shares, reap a good reward for their labour; but the bulk of fishermen, who only own or hire a little boat and sell their catch to the schooners, or at the fishing-stations, where an infamous truck system prevails, which scarcely allows them to live, fare but badly. For a quintal of cod (300 lb.), fresh from the knife, the fishermen are allowed 10*s.*, and for ling and haddock, 5*s.*, the amount to be taken out in goods upon which is charged cent. per cent. profit, and if their necessities oblige them to take any goods in advance, 15 per cent. is added. But, as there are exceptions to every rule, an Irishman named Retery, who some time since opened a herring-curing establishment in the village of Carleton, County Bonaventure, pays money down for all that he requires, while at the same time, as he justly deserves, he is growing rich on the profit. Salmon is purchased for 5 cents to 7 cents a pound, and during the spring, fresh herrings, 50 cents a barrel; and salted, 1 dollar 40 cents.; fall herrings, fresh, at 60 cents a barrel; and salted at 2 dollars 80 cents. A large number of the natives are employed at fair wages to assist the men whom he brought from home in curing those herrings, a business they appear to understand well, as what they cure will keep for years their taste and colour, and will sell in Ireland at from 6 dollars to 10 dollars per barrel. It is to be hoped that the good example set by this worthy son of the emerald isle will be widely followed, for not until money payment becomes general and the truck system is made illegal, as it is in England, can the poor fisherman expect to reap the just reward of his perilous labours.*

THOMAS CONNOLLY.

THE ASPHALTE PAVEMENTS OF THE CITY.

WE have lately examined the roadways in Cheapside and Broad-street, both of which have been laid with the Val de Travers asphalte. The examination was simply an experiment with a view of testing what abrasion or "wear and tear" was taking place. A line was stretched across the roadway at several points along their entire length, keeping the ends of the line close at either side of the street to the surface, and then marking, when the line was stretched in tension, the different points of abrasion and sinkage that presented themselves. This having been done, a wet day was awaited. The object of selecting a rainy day was to prove the lodgment of the water in those places indicated by the strained line and "straight-edge."

The proof was conclusive as to the irregular surface of the asphalte in numerous places. It is not intended to be argued that the abrasion or "wear and tear" at present is of a very serious description, yet it is sufficient to create a prospective interest in corporate and City circles on the money question,—as to cost and durability.

Commencing at the Peel statue, and proceeding onwards towards the Mansion House, the result of this experiment may be set down as follows:—Opposite Old Change, some slight punctures and ruts, where a lodgment of water takes place in wet weather. This unevenness of surface may also be observed in fine weather: the term undulation will more properly express it. Opposite Foster-lane, the same; opposite Gutter-lane, more sinkage, surface uneven, pools of water when it rains; opposite Friday-street, not so remarkable as the preceding; opposite Wood-street, Milk-street, Bread-street, and at places between where they intersect Cheapside, much undulation in the roadway, and at the angles of these streets the rain settles, and remains in pools until dried up by the weather, or becomes otherwise removed. Roadway pretty even between Bread-street and Bow Church. Hence to where King and Queen Streets intersect, there are much undulation and evidence of sinkage of the upper crust to be observed, and several hollows, where the water lies when it rains. Some ugly punctures or indents in the body of the asphalte are to be seen from the latter-named streets, onward to the corner of the Old Jewry, and lodgments of water take place in a few places between Queen-street and the angle of Bucklersbury. Between here and the Mansion House the undulatory character of the roadway can be plainly observed by the experienced eye, and a sinkage in several spots is discernible. From the glassy-like appearance

* Conclusion in our next.

of the asphalte surface, particularly when the sun is reflected on it, the ordinary observer's eye will not detect at once the up-and-down character of the roadway as it actually exists. If a line or sharp edge of timber be applied, the fact, crossways or lengthways, will be at once indisputable; or a ten minutes' rain-pour will set the matter, as to the existence of hollows on the surface, at rest. Examinations in Broad-street produced similar results along the entire length of the street, from Threadneedle-street to the Broad-street Station.

On a rainy day here the small pools of water are many, and the sinkages in the surface are shallow; but the laying of this street with asphalte is quite recent. No damaging conclusions are attempted to be drawn from this statement. The facts are clear, however, that the immense vehicular traffic on these thoroughfares is subjecting the new pavement to a most crushing and crucial test. Where no distinction can be made in London between the lightest "fly" or hansom and the heaviest locomotive, transporting "lurry," or wagon of several tons, it must be seen at once to what a terrible ordeal and test asphalte, 2 in. thick, is subjected. A future examination or experiment may prove that a disintegration of the concrete basis or body below the surface is taking place by degrees, and hence this undulation, abrasion, and sinkage; for, in thoroughfares like Cheapside there must exist a continuous vibratory motion, the result of the great and rapid traffic ever going on.

A short length of roadway, which was laid by the Limmer Asphalte Company last autumn, opposite Bermondsey Church, has worn tolerably well. The appearance of "wear and tear" here is shown by a series of longitudinal ridges, quite observable. A break-up of surface has also taken place lately in one or two spots, which have been repaired. This piece of pavement has a good fall from the middle, and the water is carried into the side channels. It is very slippery in moist weather, and requires to be kept clean. Of Lombard-street pavement it is too soon to speak, as it was only laid a few days ago by the Limmer Company. The material and process of laying of the latter company is different from those of the Val de Travers. The Limmer material is laid in a melted state, one layer or coating transversing the other. The Val de Travers is laid down on its concrete bed in a powdered state, the application of hot irons being afterwards applied to fuse the material into an even surface. The foundation for each pavement is prepared much in the same manner. It is to be observed, when a break-up or hole occurs in either of the two pavements, it widens fastly, and requires immediate attention.

The experimental pieces of asphalte pavement that were first laid by both companies has worn better, to all appearance, than any subsequently laid, probably because more care was bestowed in the preparation and workmanship.

Viewing asphalte pavement *per se*, and apart from all interested considerations, it possesses many and great advantages for a City thoroughfare,—as absence of noise, a saving in scavenging, and a saving in flesh and iron; or, in other words, it tends to a prolongation of animal life, harness, and mechanical plant. The disadvantages are its cost at present, and the possibility that its durability will not be commensurate with the expense and the obstruction entailed in laying it down; and this may still be found necessary in restoring it and keeping it intact and whole. All we ask for is caution.

STONE WORKING BY MACHINERY.

WE mentioned some time ago the stone-working machines which have been elaborated by Sir Wm. Fothergill Cooke and Mr. George Hunter, and are to be seen in operation at Battersea. We have since had another opportunity to examine into the work done by them.

The general public are much more familiar with wood-working machinery than they are with mechanical appliances for dividing, shaping, or dressing blocks of stone. At the shows of the Royal Agricultural Society, one year after another, a number of eminent wood-working machine-makers, now in business, publicly exhibit their wonderful adaptations of mechanical power as applied to the shaping, dressing, and joining of timber; but the workers of stone by machinery, comparatively few in number, do not present themselves at such exhibitions, always excepting the constructors of the terrible engines that crush and shatter masses of rock into little shapeless pieces. Notwithstanding the prominency of the one class of inventors, as compared with the other, it may be doubted whether the one art, stone-working by machinery, is not older than the other, even although the material operated upon is much less hopeful, inviting, and tractable than the other. If we mistake not, the germ of the machines in operation at Battersea may be traced back through half a century, to some of the fine pavement quarries of Forfarshire, the "Arbroath pavement" of which has been in high repute on both sides of the Tweed, and in regions much more remote, for a great deal more than fifty years.

We have mentioned wood-working machinery, and revert to it here to say, that the two kinds of machines are, in various respects, not to be compared, but are in contrast. The one set of cutters makes its 7,000 revolutions per minute; the stone saw takes its work so leisurely that one has no difficulty, and runs no risk, in feeling the teeth one after another with the finger for the entire round, to try whether they are hot: it is always found, it may be added, that they are quite cool. The cutters in the one case, wood-working, are the same as the ultimate form or contour of the work to be produced, and embrace the whole surface of the piece operated upon. In the Cooke-Hunter stone-working machinery the uniform simple principle is adopted of moulding, ripping, and slabbing by steel cutters of about $\frac{5}{8}$ in. diameter. Mouldings and flat surfaces are finished by a cutting or scraping with a tool shaped exactly to the work, and ground and pitched in the machine according to the nature of the material operated upon. It is not pretended, we believe, that the machinery is equal to "tackling" granite, but we had ocular demonstration that it makes excellent work of Portland stone, both new and old.

The premises contain at present six machines, all of which we saw in operation at their ordinary work. The slabbing machine consists of two discs, of $\frac{3}{8}$ in. steel plate, 5 ft. 4 in. diameter, which work horizontally, and cut to, and meet, within about an inch of each other. The teeth of the saws, so to speak, are of cast steel of about $\frac{5}{8}$ in. diameter on the face, and taper down to a stalk of about $\frac{1}{4}$ in. in diameter, which passes through the outer end of the cutter-holders, that are wedged to the discs between projecting pieces left for the purpose, V-edges keeping them in their place. The cut, about $\frac{5}{8}$ in., seems rather wide, but the saw-plates require considerable strength, and the intrinsic value of the stone displaced is not sufficient to tempt the risking of injury to the machinery. The "sawdust" is, besides, worth 6s. a load to cement-makers. We hear that a readjustment of this machine is to be made, by which the cut will be reduced to $\frac{1}{2}$ in. The slabber, when we saw it at work, was cutting "landers," $2\frac{1}{2}$ in. thick, from a block of Portland stone, 5 ft. 9 in. by 4 ft. on the face. It took off one slab in our presence in less than twenty-five minutes, or at the rate of about 1 ft. super. per minute, earning, at 3d. per foot, 5s. 9d. in that time, or about 5*l*. 15s. for the day of ten hours. The slabs are easily separated, the cleavage, from the round form of the cutters, being uniformly at the middle of the uncut portion. An eighth of an inch is left for planing, and is always found amply sufficient.

With the exception of the machine just referred to, and another that does duty as a turning-lathe as well as a moulding-machine, the cutters in the other machines act vertically. They are simply discs of cast steel, $\frac{5}{8}$ in. diameter, and about $\frac{1}{8}$ in. thick, bevilled to the back, to give a cutting edge. They are firmly held in their places by a piece of iron bolted to the bottom of a sloping recess, the ends of the bolted piece being parallel with the sides of the recess; they are thus fastened in pairs, with half of the little discs, or about $\frac{5}{16}$ in., projecting, to give the cuts. These cutters, punched out of softened steel plates, afterwards tempered, are inexpensive in production and very durable. They are capable of giving a fresh cutting edge two or three times. The planing and moulding machines are adapted to the dressing of plane surfaces and mouldings up to very large dimensions, and bases for columns, balustrades, with other circular work, are turned off with great accuracy and rapidity by the machine with the horizontal cutters. In such work there is a double rotary motion,—of the stone acted upon, and of the cutter-shaft. The chief work in hand at the time of the visit was planing the broad landers that were being taken off by the slabbing machine, and dressing the breasts of steps for hanging stairs, including the return of the bottle moulding on the ends, in which, we noticed that the machine produces a perfect mitre. The ripping-machine, which is equal to three or four cuts of about $8\frac{1}{2}$ in. deep, has cutters of the same form as the slabbing-machine; that is, Y-shaped steel bolts, the heads of which do the cutting.

From the spiral appearance presented by the cutters, as bolted to the collars which revolve with them, it might be expected that the result of their action would be the production of a shapeless mass, and those unacquainted with their work can only be undeceived in this by seeing the truly hewn moulding emerge from the machine, and see it finished by being passed two or three times under the final cutter, which leaves the mouldings much more true, and as clean as work polished by hand with sand and water in the ordinary manner.

There is great ingenuity displayed in the mode of arranging the cutters, and still more in the mechanical adjustments by which they are raised and depressed, and the speed regulated at pleasure, and by which the travelling tables that the blocks are fastened upon are led up to the feed, stopped, and returned for another cut. It might have been supposed that a pair of saws 5 ft. in diameter, with forty-four teeth in each, a ripping-machine, with three saws 2 ft. 6 in. in diameter, and each with eighteen teeth, with four other machines, all engaged upon heavy work simultaneously, would require a large amount of steam power. The whole of the machinery is driven by a portable engine of 8-horse power, working with 25 lb. pressure; it is driven from a 30-in. drum, making eighty revolutions in the minute.

A new machine is about to be added to the others, from which good results are expected. It will cut a block of, say 3 ft. long by 3 ft. wide and 18 in. thick, into from five to six pieces of ashlar, by one operation, in a quarter of an hour, while the same operation by sand-saws would take above half a day to perform.

POSITIVE FARMING.

WE have received a copy of a paper read, and discussed with much interest, at a recent meeting of the Social Science Association, on a subject that we can hardly pass in silence, so much have we made it our own,—our own, that is to say, in the sense of earnest and honest advocacy. If it be true, as we hold it to be, that the hope of the future depends on the wise application of the true method of positive investigation to the problems of human life, there is nothing in which a more immediate return can be expected than in the case of scientific practical agriculture. What is best to do for any given agricultural locality is known, or, at least, can be definitely ascertained. How that treatment pays, is no matter of doubt to those who will take the pains to investigate. How is it, then, that year after year "positive farming" makes such halting progress?

There are two distinct subjects involved in the paper to which we refer, which is from the pen of Mr. Francis Fuller. One is the fact that the agricultural produce of the United Kingdom is very far below that which might be certainly and remuneratively obtained. The other is, that the vast amount of pauper idleness might be converted into remunerative labour by application to our untilled lands. The argument, in either case, is not that of a theorist, but of a practical farmer.

The entire area of the United Kingdom is 77,513,585 acres. Of this, in the year 1868, 45,652,545 were cultivated. Thus 31,861,040, or say in round numbers, 32,000 acres, were uncultivated three years ago. Chinese industry, or Italian industry, would rear a crop of some remunerative description from every acre of this present waste. Making every allowance for mountainous districts, for the unfavourable climate of parts of Scotland and Ireland, and for the distances of the Highland ranges of country from the centres of population and consumption, we cannot escape from the fact, that in England alone there are upwards of 10,000,000 acres uncultivated, and more than 11,000,000 of acres, or about 50 per cent. of the entire area, under grasses or permanent pasture; only 33 per cent. of the acreage of England was under corn crops in 1863, and 760,000 acres were left under bare fallow. It thus results that while nearly one-third of England is uncalti-

vated, the cultivated two-thirds bring in a return of something less than 4*l.* an acre, or the round sum of 170,000,000*l.* sterling.

The average amount of annual labour expended on this cultivated area is estimated at the low rate of 15s. per acre. Rent, seed, and farmer's living and profits, make up the balance. At twenty-five years' purchase the value of the freehold of the country can thus only be taken at 100*l.* per acre. But what is the result of the application to even the poorest of this land of such directed labour? The cost of deep drainage, the first requisite for the cleansing of land, and for the production of luxuriant crops, is from 4*l.* to 6*l.* per acre. This sum may be regarded as an amount added to the cost or purchase value of the land in the first instance. The cost of irrigation, over the large area to which it is applicable, may be taken as less than that of drainage. These two outlays are made once for all. In annual culture, Mr. Mechi, one of our best practical authorities, expends some 50s. per acre, or rather more than three times the average. The interest on his outlay in drainage may be taken at 6s. per acre; so that, on poor land, this scientific farmer expends 2*l.* 1s. an acre more than the ordinary cultivator. What is the result? The yield is tripled. Instead of an outlay, exclusive of rent, of 15s., and a return of 4*l.* from ordinary land (and much less from poor soil), we have an outlay of 56s., and a return of 12*l.* Is it not wonderful that, instead of anxiety to avail ourselves of this lucrative secret, we are content to endeavour to explain away a success which is based on the simple law of the productiveness of industry?

One instance of the result of two years' cultivation of drained and undrained clay, deserves note. In the first case, the first year was fallow, yielding no return. The second year gave a crop of oats five quarters at 26s., or 6*l.* 10s. per acre. Mean annual return, 3*l.* 5s. per acre. On the same soil, after drainage, the first year produced tares, fed off by sheep, yielding 5*l.* 18s. 4d. The second year oats, ten quarters at 26s., or 13*l.* 10s. Mean annual return, 9*l.* 9s. 2d. Return, in two years, on the outlay of 6*l.* per acre, 12*l.* 8s. 4d. And we call ourselves a practical people! We are not in possession of returns of the area of land now properly drained in the country. As to irrigation, the ordinary plan is so wasteful and extravagant, except in cases of natural irrigation, as by the overflow of the Severn, the Avon, and other rivers, that scientific irrigation may be said to be as yet almost unattempted. We shall therefore be under the mark in estimating that labour to the amount of 150.000,000*l.* sterling could now be profitably, most profitably, applied to the soil of England alone. If we allow ten years for the expenditure of that sum (which will be replaced, with cent. per cent. interest, in the meantime), there will remain room for the steady annual expenditure of fifty-six millions in extra labour in the drained and irrigated soil, an outlay that will bring in a return of at least 300 per cent., or add 178,000,000*l.* to the annual increase of our fields.

A million sterling per week expended in labour. That is what the soil of this country requires for its fair utilisation. Three millions per week will be the result! That is what we are steadily wasting. A regular employment for our labourers, more active than that caused by the most busy years of the period of our railway construction, is within our reach. The return for this employment would be far greater than the most promising estimates of the engineers of the time of Robert Stephenson; and while land is thus crying out for hands, how many hands are idle for want of work? Let the returns of the Poor Law Board be appealed to for a reply. There were 988,257 paupers on the 1st of July, 1870; and while a million of the population were thus employed in a land where there is room for the employment of at least an equal number, not only of souls, but of industrious workmen, 68,379 emigrants left our shores in the same year. Upwards of thirteen millions and a half of pounds worth of that costly product—man—we thus exported to enrich the United States, British North America, and our Australian colonies. For when we send out emigrants it must be borne in mind that they are, to a great extent, the pick of the working classes. The old, the helpless, and the infirm are left to swell the great army of paupers. It is instructive also to remark that we imported farming produce, exclusive of the cereals, in the same year, to the value of more than fourteen millions and a half sterling.

We paid, it may be said, in that commodity which it takes the longest time and the greatest cost to produce,—the value of that butter, and cheese, and eggs, bacon, pork, salt beef, potatoes, and clover seed, that we omitted to produce at home, because we chose to leave a third of our soil untilled and a million of our population unemployed!

If these things were told us of some distant Abyssinian or Australian people, how we should speak of the folly of the poor savages, and the want of the light of a sound political economy to guide their actions! We should, no doubt, send missionaries among them. We should get up an interest in their behalf. But as it is only at home,—as it is only a case which we can touch with our own hand, see with our own eyes, and amend with our own industry,—we are content with letting things take their course, with observing that it is contrary to sound economical views to attempt to interfere with the employment of capital, and with stigmatising as dreamers or enthusiasts those who are always boring us with their inconvenient sums in agricultural arithmetic! What will be the opinion of our grandchildren of the positive farming of the year 1871?

THE EDUCATION OF THE BLIND.

AMONG the many forms of suffering which in this philanthropic age are sought to be alleviated, none address themselves more strongly to our sympathies than those caused by blindness. The sufferers are very numerous, about 1 in 1,000, giving a blind population in the United Kingdom of over 30,000. The great majority of these belong to the poorer classes, to whom life is a hard struggle under any circumstances, but when over-weighted in the race by the loss of so important a sense as that of sight, they must fail unless some special provision be made to facilitate their acquisition of knowledge, and to diminish, as far as possible, the difficulties under which they labour in their attempts at self-maintenance. The true solution of the question, "How can we best assist the blind?" lies in the direction indicated; and, put into the fewest words possible, the answer is, "By placing them under the most favourable conditions to assist themselves."

The spirit of the times is entirely opposed to the idea of constantly increasing the size of blind asylums, and making larger and larger demands on the public for the means of keeping our blind in idleness; and not only is the folly of such a course now well understood by the public, but it is equally opposed to the wishes of the great majority of the blind themselves, who want education and employment, and not alms. It is, however, quite certain that very few who have become blind in adult life can ever maintain themselves fully, and many can do scarcely anything in this direction: for these there will always be ample scope for charity; but most of the young ought to receive such an education as will fit them to become useful working members of society; and as this result has not yet been obtained in England, we may reasonably suspect that there is something wrong in our way of educating and employing the blind.

The first thing that strikes an inquirer is the want of agreement in the first essential of education, namely, the form of letter best suited for the purpose of reading by touch. All blind people read by embossed characters, but these differ so entirely in their shape that books printed in one character cannot be read by those who have been educated to use another; and as each form of embossed character has its own uncompromising advocates, the same books are printed in several systems, thereby increasing the cost and diminishing the number of books legible by the blind. It is to be hoped that a check has at length been placed on this wanton expenditure and ruinous competition. About three years ago a few blind gentlemen, practically well acquainted with the subject, agreed to work together, and the British and Foreign Blind Association, under the patronage of her Majesty, was formed by them. This Association has just published its first report, in which the following passage occurs:—

"The members of the executive council are either totally blind or so nearly so as to make it necessary for them to use the finger, and not the eye, for the purpose of reading. Each member must be able to read at least three systems by touch, and must be unpledged to any.

They have now been at work in concert for nearly three years, constantly perfecting themselves in and practising every system which either has obtained wide currency or appeared to possess special merit. They have personally interrogated the more intelligent of the blind within their reach, and through their corresponding members have acquired a knowledge of the wants and wishes of the blind of other countries. The results are partly of a positive—partly of a negative character; but some of the questions that have been long under discussion may now be considered as finally settled, and to these the Council desire to draw attention.

The Roman letter in all its forms is condemned by the almost unanimous consent of the educated blind of the civilised world; but though unsuited to the every-day wants of any class of the blind, it may still with advantage continue to hold a subordinate place in their education.

The three existing line systems of Lucas, Frere, and Moon are useful, but imperfect. They have all done and are doing good service in the education of the blind, and their employment may be continued until they have been replaced by a better and more carefully-considered line system.

The only system which, in the opinion of the council, meets the requirements of those who are to use it, as perfectly as their case admits of, is the dotted system of M. Braille. Introduced into the Paris School in 1834, it has been steadily and surely growing in favour, till there is now probably scarcely a country in the civilised world in which it is not widely known and used; and it has attained this position in the esteem of the blind, in spite of the ignorant, though well-meant, opposition raised to its introduction in almost every institution in which it has finally been adopted. England has been almost the last country to recognise its value. Here and there a blind person has by accident learned it; but previously to the labours of the Association there was not a single institution in the United Kingdom in which it was taught, and in most it had never even been heard of. Such a statement may appear incredible, but it is nevertheless strictly true. This dotted system is far superior to any other for the purposes of writing and musical notation, and it possesses the great merit that the written is identical with the printed character, and can be read by the blind with the greatest ease. It is therefore invaluable for writing from dictation, exercises, &c. The council recommend it as the educational system for all blind children, and for the every-day wants of all well-educated blind persons whose touch has not been seriously impaired by manual labour. For the old and the dull of brain and touch, they recommend a simple line system, approaching as near to the Roman as is compatible with perfect tangibility. Moon's, though not nearly all that could be desired, answers the purpose tolerably well; but in this transitional period it is not advisable to spend money in setting up any fresh books, except in the Braille type, which is the only one that possesses the qualities likely to insure permanence and universality.

The council are desirous of effecting as much immediate good as possible; hence, though they are tolerably well agreed as to the changes that ought to be made in the line character, they are devoting most attention to the education of the young, leaving the adult blind for the present to be provided for by other agencies. One main difficulty in the way of educating the young blind is the great cost of most of the appliances: this the council have endeavoured to meet by the manufacture of cheaper and better apparatus than any hitherto in use. No one who has not made the attempt can have any idea of the extreme difficulty of combining great accuracy and durability with cheapness. This has been in a great measure accomplished as regards the Braille writing-frames, which are now within the reach of every blind person who wishes to avail himself of the advantages of writing. The fact that the first gross of these frames has been already sold speaks for itself; and, as the great majority of the purchasers are poor, this quick sale is evidence not only of the cheapness of the frames but also of the wide-spread desire for self-education existing among the blind. The pocket writing-frame, with pocket alphabet and style, can now be obtained for a shilling, and this price covers the cost of manufacture.

Another obstacle to the diffusion of the knowledge of the Braille system has been the absence of printed books in English. With the view of meeting this want one of the council has perfected the process of stereotyping used in France, by which the cost of production of stereotype plates is greatly reduced; and as the blind can themselves produce these plates, a new and remunerative means of employment has been discovered. Some school-books have already been issued by the Association, and will shortly be followed by others. The work on the 'Education and Employment of the Blind,' by Dr. Armitage, has been published, under the sanction and at the expense of the Association, and will assist in the dissemination of much useful information. The closer union of the blind of different countries cannot fail to be productive of the happiest results, as the knowledge of every invention useful to the blind will now be rapidly spread throughout the world. The council consider that they have only commenced their labours. There is the same want of agreement and knowledge with regard to the appliances for teaching arithmetic and geography, as for the purposes of reading and writing. The best method of teaching must be worked out, and the best and cheapest method of manufacture has to be discovered. Many works have to be printed; elementary and other books on music must be published, and the whole plan of the musical education of the blind must be changed, so that something may be accomplished by blind musicians in England comparable to the happy results achieved in other countries."

An allusion is here made to the very important subject of music as a remunerative employment for the blind. For a full account of what has been done in this respect in France and America, the reader is referred to Dr. Armitage's recently-published work.* M. Gaudet, head of the educational department of the Paris school, says with regard to piano-tuning:—

"Whenever an art or trade is of such a nature that the blind can follow it on equal terms with the seeing, or, in other words, that there is a peculiarity in it which causes a disappearance of the inequality generally existing between them, this art or trade is especially well suited to the

* "The Education and Employment of the Blind: what it has been, and ought to be." By T. R. Armitage, M.D. Hardwicke: Piccadilly. The author of this interesting and ably written little volume is Hon. Sec. to the British and Foreign Blind Association.

blind, and it is our duty to teach it with as little delay as possible. Now, in pianoforte tuning, the blind are not inferior to the seeing, but, on the contrary, possess certain advantages over them; we must therefore train tuners. There is no fear of the demand ceasing; therefore we must train as many tuners as circumstances will permit."

The following occurs in the report of the Perkins Institution for the Blind, Boston, U.S.:—

"The teaching of music and playing is now the largest single field open to the blind as a means of support, and it seems to be growing larger. People are becoming more disposed to employ them, and as they go forth from the school they have more and more ground of hope that they will find opportunities to earn their living in this way."

It is found from the experience of these two institutions that, with proper education, 30 or 40 per cent. of the young blind can learn to maintain themselves fully by music. In the United Kingdom there are probably not two per cent. who accomplish this; the difference in the results being ascribable entirely to the difference in their education.

It has been proposed to establish a new institution in London where the young blind who have musical ability can receive such training as will fit them to maintain themselves by teaching, tuning, and as organists. This last branch of the musical profession does not pay nearly so well as the two others, but is worth cultivating as an auxiliary means of income. If such an institution is to be successful, the teaching must be of the highest order, and it must be conducted by men who have experience, knowledge, and faith. The cost of this kind of education will necessarily be considerable; but, with well-selected pupils, it will not be too much to expect a success of about 80 per cent. All the pupils should be paid for either by the institution sending them or by individuals. This plan avoids the very objectionable system of election; and as the protector of each pupil will take care to see that the education given is worth the sum paid, continued efficiency must be kept up, or the number of pupils will at once fall off.

The result of the commendatory endeavour to establish a new school must be decided before next month. More than a third of the means (some 3,000*l.*, in money and fees), requisite to found and carry it on for at least a couple of years, has already been promised; and by the end of that time, it is conceived, if it can be established in the meantime, its value will have been clearly proved.

For primary education the ordinary schools for the seeing may be much more used than at present, as soon as the blind children have been taught to make use of the appliances best suited to them for reading, writing, and ciphering, and when good embossed maps are procurable at a moderate cost.

There are day-schools for the blind in London in connexion with the Indigent Blind Visiting Society, where about 200 blind of all ages are being taught to read and write. The classes are held at 5, Red Lion-square; at the Home for the Blind, Whitechapel; also at Stepney and Clerkenwell. (The times of meeting may be obtained at the office of the Society, 27, Red Lion-square.) Half an hour's visit to any of these classes will convince any one that in the Braille system of notation we have a most important means of educating the young blind; and what has been done at scarcely any cost in these classes may be taken as an example of what may be done in all departments of blind education by always adopting the methods and appliances which most exactly meet the wants of the pupils.

CHURCH OF ST. MARY-LE-STRAND.

THIS church, which has been closed for some time, is now again open for divine service, and is all the better for the works done during the recess. Our country readers will only need to be reminded that it was built from the designs of James Gibbs, from 1714 to 1717, to know its style and character. The south flank of the church, facing the Strand, with its range of pediments and columns on a lofty stylobate, is particularly handsome: seen by moonlight, for example, it presents a picture which would be more often admired if it were in another country. Visitors, by the way, who have not seen London moon-lit do not know it: Trafalgar-square, the clock-tower seen from Westminster Bridge, the Duke of York's Column from the Park, and a dozen other spots viewed by "the pale moonlight," pay for a journey. But this is not the subject just now. We simply wish to say that the interior of St. Mary's-in-the-Strand has been decorated and improved under the direction of Mr. R. J. Withers, at the cost of some 1,200*l.*; Messrs. Dove have executed the general works, Mr. Pulling did the decorations, and Messrs. Hart & Co. the gas-fittings.

The ceiling of the nave, which is mightily elaborate, has been coloured in neutral tints picked out with gold, and the walls have been treated in a similar manner. Upon the fascia, which runs round the whole of the building, some texts of Scripture are inscribed, very happily and appropriately selected. The large panels below the cornice are left for the present a warm Indian red, but it is contemplated to fill them with painted figures, as well as the panels of the reredos, when sufficient funds have been collected. The west gallery is now restored to its original condition, and, supported by handsome stone columns, forms an attractive feature on leaving the church. The unsightly pews have given place to open benches, the old dark oak having been made use of. The old altar-rail and gates have been brought forward a few feet outside the chancel-arch, and serve as a dwarf screen; and the stalls having been considerably extended, afford accommodation for the clergy and a choir. The altar is approached by five steps from the nave, and the floor of the sacrarium is laid with tiles. The old pulpit has been let down on to a low oak pedestal, of appropriate design. Five geometrical windows of green cathedral glass from the manufactory of Mr. W. M. Pepper, have been inserted on the south side of the nave, the gifts of parishioners and other friends; and it is to be hoped that subscriptions will be forthcoming to enable the committee to fill those on the north side in a similar manner. A *Te Deum* window is also contemplated for the west end, but this and many other matters must stand over for the present.

The windows of the sacrarium are filled with stained glass by Messrs. Heaton, Butler, & Bayne, and the vaulting is elaborately painted,—a little overdone perhaps, like that of the nave, but time and the gas will lessen its fussiness. The church, we may add, has been heated by Messrs. Perkins.

Few probably remember that when Gibbs made his first design for this church it included a column to stand 80 ft. from the west front, 250 ft. high, and bearing a statue of Queen Anne. Stone was brought on to the ground to form the foundation, but the Queen dying, the idea was abandoned, and the present steeple was built with the church in lieu of a mere bell-turret originally intended.

VALUE OF LAND IN LONDON.*

WHEN we reflect that, whilst in the year 1811 our whole population did not exceed twenty millions, and that of London was under one million and a half, whilst at the present time the population of London probably reaches to nearly four millions and the population of the United Kingdom to something like thirty millions; whilst the amount of gold in circulation has very largely increased, especially since its discovery in Australia and California, and wherever land remains the same in quantity, a remark which strongly applies to the commercial centre of London; it is almost a natural consequence that the value of land in London, and more especially in its great commercial centres, should have increased in the proportion which it has done.

The population of London is constantly reinforced by the influx of residents from provincial districts and foreign countries. Twenty years ago, the proportion of these residents in London, twenty years of age and upwards, was as 645,000 born in London to 750,000 born in the country or abroad.†

The Registrar-General in 1851 (just two decades ago), taking equal areas to obtain a fair comparison, found that the population of London had increased in the following manner, viz.:—

In the year	1811	the population was	1,138,815
,,	1821	,,	1,378,947
,,	1831	,,	1,654,994
,,	1841	,,	1,948,417
,,	1851	,,	2,362,236

that is, just one million in forty years; and it is remarkable that the population of London in 1851 is very nearly the same as the estimated population of Imperial Rome, and about double the present population of Paris.

The natural increase of the population of the United Kingdom,—that is, the excess of births as compared with the deaths, for the three months ending March 31st, 1871,—was 95,426.

The Registrar-General calculated that, if the population increased in the ratio it had done between 1841-1851, it would reach six millions before the end of the present century; and if it be true, as it is asserted, that the present census will disclose that we have a total population of four millions in London alone, this calculation will probably be more than verified.

These facts have for us a very practical as well as speculative bearing. The confined area within which business is transacted in the City, and the enormous increase in the population which is continually going on, must inevitably lead to the displacement of certain trade centres and a consequent variation in the values of property. Some of these changes may be already anticipated by a consideration of what has occurred in analogous cases; but it is, of course, impossible to foretel with any degree of accuracy in what direction the exodus will take place, and what may be the extent of the land which will be required to meet the wants of an ever-growing population.

Were it possible to forecast what will be the future centres of value, or to define what will become the great lines of traffic, we might, there is no doubt, make a very practical use of this knowledge. The very complex social system under which we live, the force of habit, and a complacency which makes us satisfied with things as they are, renders it extremely difficult to effect changes or improvements, and the partial manner in which nearly all alterations are carried out, makes it almost impossible to predict, with any certainty, the effect of such alterations upon the value of land within the metropolitan area.

That some important changes are inevitable may be inferred from the extraordinary development that has taken place in some branches of trade; and, on the other hand, the almost total collapse of some of the most important industries upon which we formerly relied.

As an instance of the changes which affect us, may be mentioned our trade with the colony of Australia, which has sprung up entirely during the present century, and has now assumed very remarkable proportions.

In the year 1860, the declared value of the exports to the colonies was nearly 10,000,000*l.*, and of our imports 5,500,000*l.*; while in 1868 the imports were 12,077,965*l.*, and the exports 18,066,687*l.*; and yet, with our extended commercial relations, and the great increase of our commerce, the trade centre of this enormous business remains nearly the same as in the beginning of the century. Some changes have, however, taken place, which have been important.

I may cite the removal of Smithfield Market from the middle of London, which caused considerable disturbance to business, affected the value of land to some extent, and caused, probably, some cases of individual hardship in consequence of the value of ground having declined for a time; but the erection of the New Meat Market, and the alterations which have been effected in the neighbourhood have once more raised the character of the site, and in all probability rents are now higher in Smithfield than they were before the removal of the market. The planting of the market at Islington has largely tended to the development of the property in the neighbourhood, and the preservation of a large unoccupied space is no doubt beneficial in a populous overcrowded locality.

The transfer of the Meat Market from its ancient *habitat* in Newgate-street to the handsome and commodious building in Smithfield which it now occupies, has also to some extent influenced the value of land in the former localities; but there can be little doubt that the area of the old market will be rapidly absorbed by other trades in the vicinity (probably by the bookselling trade), and a proper equilibrium established.

The removal of public offices from the interior of the City to the more western part of London has tended to relieve the plethora of population, which at times threatens to choke the City. The transference of the Government of India from the East India Company to the Crown in 1855, by the Act 21 and 22 Vict., c. 106, rendered the East-India House in Leadenhall-street unnecessary, and its site became available for the erection of offices.

The Excise-office, in Old Broad-street, which was built on the site of Gresham College, in 1774, was in the same manner removed to Somerset House, on the incorporation of the Board of Excise with that of Stamps and Taxes

* By Mr. Edward I'Anson. See p. 420, *ante*.

† Of foreigners in London, it is estimated that no less than six-sevenths, or upwards of 30,000, are natives of Germany or German provinces.

in 1849, and the old Excise-office was converted into offices, and renamed Gresham House.

The South Sea House is another example of a somewhat similar transformation, a portion of the premises being occupied by the Oriental Banking Corporation, and the remainder by the Baltic Coffee-house and Sale-rooms.

The Hudson's Bay Company's premises in Fenchurch-street, after having remained unlet for a considerable time, have been recently let and converted into private business offices.

It has been lately proposed to remove the Royal Mint from its present position on Tower-hill, to some more convenient locality, and the Thames Embankment has been suggested as a fitting spot. This matter, however, is for the present in abeyance.

Whatever changes have occurred, or may supervene, in other departments of commerce, it is tolerably certain that the money-market will always remain in the heart of the City; and there is, therefore, little reason to fear that the value of land in the neighbourhood of the Bank and the Royal Exchange will suffer any diminution. Cornhill, and the streets in its vicinity, must always be the centre of London and the centre of business activity; and it is not easy to imagine any alteration, short of a political cataclysm, hitherto happily unknown in this country, which could in any way deteriorate from its value. The recent removals of the capital of Italy from Turin to Florence, and thence to Rome, as well as the possible abandonment of Paris, are, no doubt, suggestive facts; but I venture to think that, so far as we can form any opinion of future events, London will always remain the centre of imperial British commerce, and the city of London the focus of commercial activity.

LAND AND LABOUR IN NEW ENGLAND.

In a lecture delivered for the benefit of the Working Men's Club and Institute Union, in the Theatre of the Royal School of Mines, Jermyn-street, on Saturday last, Mr. T. Hughes, Q.C., M.P., referred incidentally to the questions indicated above. The lecture was for the greater part descriptive of what Mr. Hughes had seen, and the impressions he had received, in "a visit to the United States." In relation to the land question, there was not in America, he stated, the sentimental regard for landed property that existed in this country; there was, however, an eager desire, even among the working-classes, to possess land, but less from an idea of hereditary or permanent possession, than from a speculative spirit, the value of land being often greatly increased as districts became settled, their resources developed, and their means of communication improved. The opinion, that appeared to be gaining strength among the working-classes of England, that land was national property, and that the reclamation of waste, and the increased value of other lands, should be devoted to public uses, would meet with no sympathy in America. Nothing could be more unpopular than such a policy if proposed there. In connexion with the labour question, Mr. Hughes stated that he had met with a number of working men in different parts of the States, that he had known in this country, and learned from themselves that in New York, Boston, and large cities, they were little, if at all, better off than they had been here. They had higher wages, it was true, but this scarcely compensated for the more expensive living, and they complained that the "bosses," or foremen, were harder, and more exacting and insolent. In smaller towns, however, their condition was much better. At Ithaca he had seen a number of masons who had gone out to the building of Cornell University, and found that these men were very well satisfied with their condition. With average intelligence and industry, they had the power not only of earning a comfortable subsistence, but of accumulating property. Many of them were able to take small contracts, which enabled them very materially to better their condition. One man, for instance, he met with who had leased a small quarry, upon which his spare time was very profitably expended.

In commenting upon the cities of the States Mr. Hughes remarked that Philadelphia, with its buildings of red brick and white marble, and its fine lines of trees, was in colour and otherwise the most beautiful of them all; and that it was the glory of Philadelphia to have provided the best workmen's dwellings, as he believed, that were to be met with in the world.

Mr. Hughes concluded his interesting lecture by referring hopefully to the circumstance that the two great English-speaking nations were getting to understand each other better; and, unlike others who had so recently given such a terrible illustration of one mode of settling a dispute, were setting to the world the example of an appeal to reason for the settlement of their differences.

TUNNELLING MACHINES.

Col. Von Schmidt, of San Francisco, has invented a machine for tunnel-boring,—a machine which is intended to meet the requirements of the latest scheme extant, the Tahoe water project. According to the *Bulletin*, the machine is constructed upon the severance diamond-drill principle; but in the mode of application the machine differs materially from all others now in use. The Von Schmidt drill will consist of a circular wheel, 8 ft. in diameter. Imbedded in the rim of the wheel, each revolving on its own account, will be twenty-four diamond drills, 1 ft. apart. In the centre of the wheel, according to the model, is a single drill, and this is kept 1 ft. in advance of the other drills. The wheel is calculated to make 800 revolutions per minute, the drills revolving at a higher rate of speed. The periphery of the tunnel will be on the scale of 8 ft.; the groove cut by the drills will be 2 in. wide and 3 ft. deep. It is intended to load the centre hole alone, then run the machine back on the track, and raise the lower half of the wheel on hinges. The blast is fired, and the great cheese of rock crumbles in pieces. The machine is constructed so as to admit of 3 ft. space inside the wheels, between its framework and the bed of the tunnel, thus giving facilities for removing the *débris* afforded by an inner car-track. The machine will be driven by compressed air.

The invention of Mr. T. F. Henley, Pimlico, as described in the *Mining Journal*, consists of a tool-holder, or head, adapted for receiving chisels or tools suitable for cutting rock. This tool-holder is combined with an arm or shaft, the two together being called the ram-head and ram-shaft, or collectively the ram. This ram is mounted by suitable connexions on a main frame or base plate, which is fitted with wheels or skids and guide-rollers for the purpose of advancing or withdrawing the machine, as may be required. The ram is made to receive a fore-and-aft movement of percussion from any suitable motor, simultaneously with a horizontal motion to the right or left, and *vice versâ*, by means of mechanical arrangements.

A Machine Tunnelling Company has been set agoing, with a capital of 30,000*l.*, in shares of 5*l.* each, for the purpose of acquiring and working the tunnel-driving machinery recently patented by Captain Beaumont, M.P., and Mr. C. J. Appleby, C.E. The machine has been practically tested. Mr. T. J. Bewick, C.E., of Haydon Bridge, certifies that under unfavourable circumstances they progressed at the rate of about 15 yards in a month, and that it is subject to but little wear and tear. Compared with ordinary manual labour, it is estimated that the work done was about double. The machine has the advantage that it can work several drills simultaneously, and each drill can bore an inch a minute in the hardest granite. A reliable mode of setting the diamonds in the drill-head is still to be discovered. The diamonds cost 10*s.* or 12*s.* each, and quickly work out of the setting.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

The Congress for 1871 will be held at Weymouth, in the week of August 21 to 26 inclusive. Sir William C. Medlycott, bart., of Ven House, Sherborne, Dorset, has undertaken the office of President. The Mayor of Weymouth and a local committee are in concert with the Council, and there is every promise of an agreeable week in a district rich in antiquities, yet comparatively unexplored. The aid of associates is invited to make the meeting as numerous as possible, and to add to its interest by every means in their power.

The finances of this society have always been managed with remarkable care, and much is done with a comparatively small amount. The journal is itself a good return for the guinea annually subscribed. The treasurer, Mr. Gordon M. Hills, in his Report for 1871, just now issued, states that the amount received from subscribers has been less than it was last year,—less, indeed, than the expenditure,—apparently from want of punctuality in the payments, the number of subscribers remaining nearly the same; yet so well have the resources been husbanded that he can still announce a balance at the bank of 290*l.* 11*s.* 9*d.*

Referring to some of those associates who have for years laid the results of their inquiries and rare knowledge before the society, the treasurer very rightly urges the desirability of enrolling new friends, fresh instruments of aid, and instruction yielding fresh lines of thought and research. Young ardent spirits who are seeking a platform might find it here. The death of several old supporters of the association is mentioned. Speaking of one of them, the late Dr. James Copland, a kind and learned man, the treasurer alludes to some of the contributions the Doctor made at their meetings. "I remember," he says, "that in April, 1861, he produced a Latin MS. Missal from Ely, believed to be of the end of the fourteenth century. In it was written a distich, in the fifteenth century, containing a curious evidence as to Londoners not to be expected in such a book; but showing that the citizens were then contemptuously called 'Cokneys,' and had a reputation amongst their rural compatriots for luxurious idleness."

The Weymouth Congress promises to be agreeable and valuable, and some of our readers may thank us for leading them to think that they can help to make it so; that is, if they act on their thinking.

THE SUBTROPICAL GARDEN.*

Mr. Robinson is the author of several works on English and Parisian gardening, and has consequently arrived at much familiarity with his subject. Many people of horticultural taste, who have seen specimens of these former labours, will take it for granted that what he may have to say about any branch of gardening will be as a word to the wise, weighty, sufficient, and convincing. But, unfortunately for themselves, there are many persons to whom gardening is an unknown delight; and there are many others who, having small gardens, are content with their few dry and dusty shrubs, prickly gooseberry-bushes, and frail annuals. To the last two sets of people Mr. Robinson has now opened out a new world of enjoyment in a small volume he has entitled "The Subtropical Garden;" and to the horticultural adept, as well as to the amateur owner of palatial gardens with terraces and parterres, he has given in it many hints that will be hailed with pleasure.

The titular term subtropical is, perhaps, rather misleading. We should be disappointed if we looked for instructions how to form and fill, in our humid island, a garden that would be indistinguishable from that of an Algerine bey or that of a merchant of Madeira. All that we find in Mr. Robinson's new book is an indoctrination of the desirability of the use of plants that have handsome foliage and a graceful mode of growth as a relief to flowers, followed by a selection of those that are most suitable for the purpose and our climate. All the plants he recommends are not from subtropical climes. According to his definition, "Subtropical gardening means the culture of plants with large and graceful or remarkable foliage or habit, and the association of them with the usually low-growing and brilliant flowering plants now so common in our gardens, and which frequently eradicate every trace of beauty of form therein, making the flower-garden a thing of large masses of colour only." Tender plants reared in hot-houses have no special charm for him. Hardy plants, such as the yuccas, the arundos, the acanthuses, the Pampas grass, and some kinds of palms, have an effect quite as satisfactory as any requiring a conservatory for their winter shelter; and these, mixed with young trees and a few house plants, are the only requisite stock in trade for a model garden. "What I wish to impress upon the reader," affirms Mr. Robinson, "is, that in whatever part of these islands he may live, he need not despair of producing sufficient similar effect to vary his flower-garden or pleasure-ground beautifully by the use of hardy plants alone; and that the noble lines of a well-grown *Yucca recurva*, or the finely-chiselled, yet fernlike spray of a graceful young conifer, will aid him as much in this direction as anything that requires either tropical or subtropical temperature;" and then

* "The Subtropical Garden; or, Beauty of Form in the Flower-Garden." By W. Robinson, F.L.S. London: John Murray. 1871.

he relates how he visited the South of Ireland, on his way home from America, and found at Fota Island, the residence of Mr. Smith Barry, exactly such a garden as he advocates. It was filled with hardy plants, such as the bamboo, pampas grass, New Zealand flax, yuccas, cypresses, and pines, and presented the most charming scene, he declared, that he had ever enjoyed in a pleasure-ground in the British Isles.

For our own part, we advocate fruit-growing before floriculture; and we would always accord the gardener who produced the most fruit in the least space the same praise Dr. Johnson, and others before him, voted to the man who made two blades of grass grow where there was only one before. Mr. Roach Smith, with his urgent advocacy of the cultivation of every cottage garden, gable, railway slip, and every waste corner, with fruit, has our warmest regard, and we willingly endorse every word he has written in the furtherance of fruit-growing to such an abundance that all may partake of it as part of ordinary every-day fare. But we cannot expect the custodians of public parks and the owners of extensive grounds to devote the whole of them to fruit culture: consequently Mr. Robinson's recommendation for the production of scenes of vegetation that will give pleasure to the eye and refreshment to the jaded brain may be counted as likely to be acceptable in such quarters. In Battersea Park, he continues, the first attempts at subtropical gardening were overdone and unfortunate; and some of the formal arrangements in other London parks are likewise condemned by him. Geometrically-formed beds of masses of the same plants are especially distasteful to him. The day will come, he says, when we shall avoid all formal twirlings in our gardens as assiduously as we now court them. These vanities were excusable when the materials for a garden were few; but now that we have at least 10,000 hardy exotic and British plants to choose from, we should reject them as scornfully as a landscape artist would turn from them. The time was when Allison wrote, "In gardening, the materials of the scene are few, and those few unwieldy; and the artist must often content himself with the reflection that he has given the best disposition in his power to the scanty and intractable materials of nature;" and when every book on gardening, from that of Gervase Markham downwards, boasted its designs for knots and plats, as geometrical beds were then called. But Mr. Robinson would have us change all this, do away with our defined daubs of colour and what he calls our pudding-like heaps of shrubs, or what other people call our colour-gardens and our leaf-gardens, and, in their place, fill our pleasure-grounds with feathery palms, the outspreading ailanthus, tapering conifers, tree-ferns, cannas, &c., and with them associate tall, bold flowers. Hollyhocks surrounded by a ring of cannas present a very different aspect to their accustomed melancholy when tied to a row of stakes along a prim garden-wall; and a few heads of Fortune's tiger-lily rising above a group of the same plants form one of the most brilliant pictures the eye of gardener has conceived. Combinations of dahlias with cannas and other free-growing subtropical plants are also recommended as of gorgeous effect. Isolated tufts of gladioli rising out of the sward; surfacings of *lobelia speciosa*, or almost any annual biennial, or ordinary bedding plants, as a low light covering to a bed of erythrinas; tall *sparaxis pulcherrima* leaning out of masses of foliage; sunflowers planted in the grass near groups of fine foliaged plants; ferns, not in ferneries, but out in the sun in the grass, either alone or grouped with acanthuses, are the kinds of effects we are instructed to admire. In a word, a revolution in flower-gardening is preached, and there is to be a reign of "verdant grace," consisting of a judicious intermingling of fine-leaved plants with brilliant flowers. Old familiar friends, such as the rhubarbs, treated in new ways, appear to have quite new faces, and when found used as ornaments for the margins of shrubberies are scarcely recognisable. Some varieties of rhubarb have been planted, regardless of the new suggestions, in masses in Hyde Park, to the discontent of our author. The castor-oil plant, too, is another familiar face of late years planted in the London parks with puzzling effect. It shoots up an unbranched stem to a height of nearly 12 ft., and is clad with leaves nearly 3 ft. wide. When, in warmer climes, it would develop side-shoots and become a small tree, autumn comes and puts an end to progress. But in this case Mr. Robinson does not grieve, because he considers this plant handsomer in a simple-stemmed state than any other.

Nathaniel Hawthorne wrote of gourds, the author reminds us, in these enthusiastic words:—"A hundred gourds in my garden were worthy, in my eyes at least, of being rendered indestructible in marble. If ever Providence (but I know it never will) should assign me a superfluity of gold, part of it shall be expended for a service of plate, or most delicate porcelain, to be wrought into the shape of gourds gathered from vines which I will plant with my own hands. As dishes for containing vegetables they would be peculiarly appropriate. Gazing at them, I felt that by my agency something worth living for had been done. A new substance was born into the world. They were real and tangible existences which the mind could seize hold of and rejoice in." And though in New England the gourd family thrives better than with us, we may yet enjoy some of Hawthorne's pleasure in the contemplation of this curious tribe. They are recommended as suitable for low trellises or for training over arches, or for covering framework to form summer-houses. The singular shapes of this fruit, now a writhing snake-cucumber, now a giant pumpkin, weighing 200 lb. and more, now egg-formed and egg-sized, now club-like and casket-like, now as small as a gooseberry, now like a folded umbrella, or a ball, a vase, an urn, are truly wonderful to consider; and it is without surprise that we find Mr. Robinson has mentioned them with commendations. Of the 500 varieties that have been grown in England, however, by Mr. W. Young, only twenty-five are catalogued as desirable for a subtropical garden.

In addition to the faint contour we have given of the contents of this writer's new work we must add that it confers upon a reader new lights with which to look at horticultural efforts and effects. Those who will take the trouble to trace out the suggestions made in its pages will find themselves endowed with an access of perceptive powers in gardening matters, and thus qualified to enjoy what might have had otherwise but comparatively little interest for them.

The book includes a large number of engraved illustrations, a few of which we are enabled to give, to show their value in enforcing the object of the work.

Yucca Pendula.—Hardy Evergreen fine-foliaged Type.

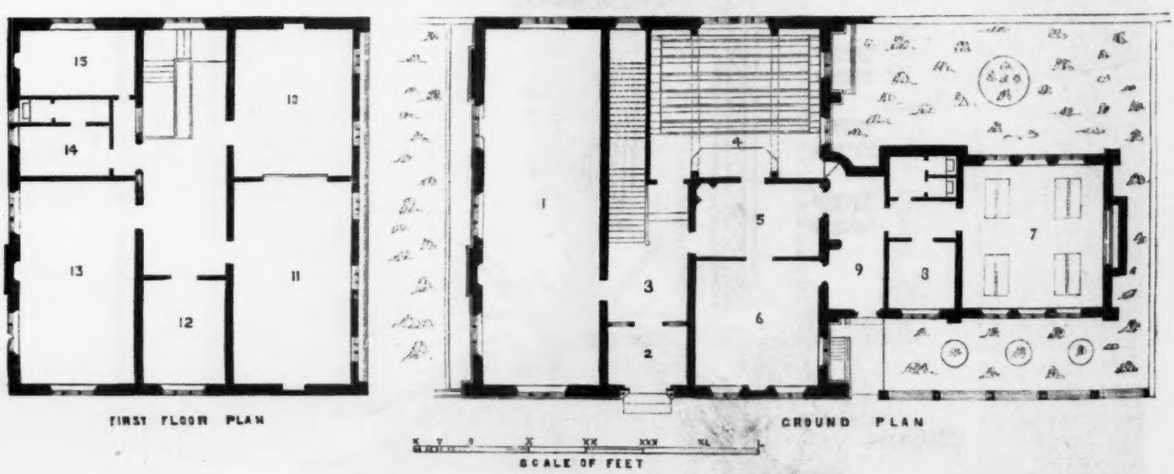
BEAUTY OF FORM IN THE GARDEN:—

View showing the Value of Groups of fine-leaved Trees and Plants.

Caladium Esculentum.—Tender Section: displaying noble Leaves during Summer in Southern Counties.

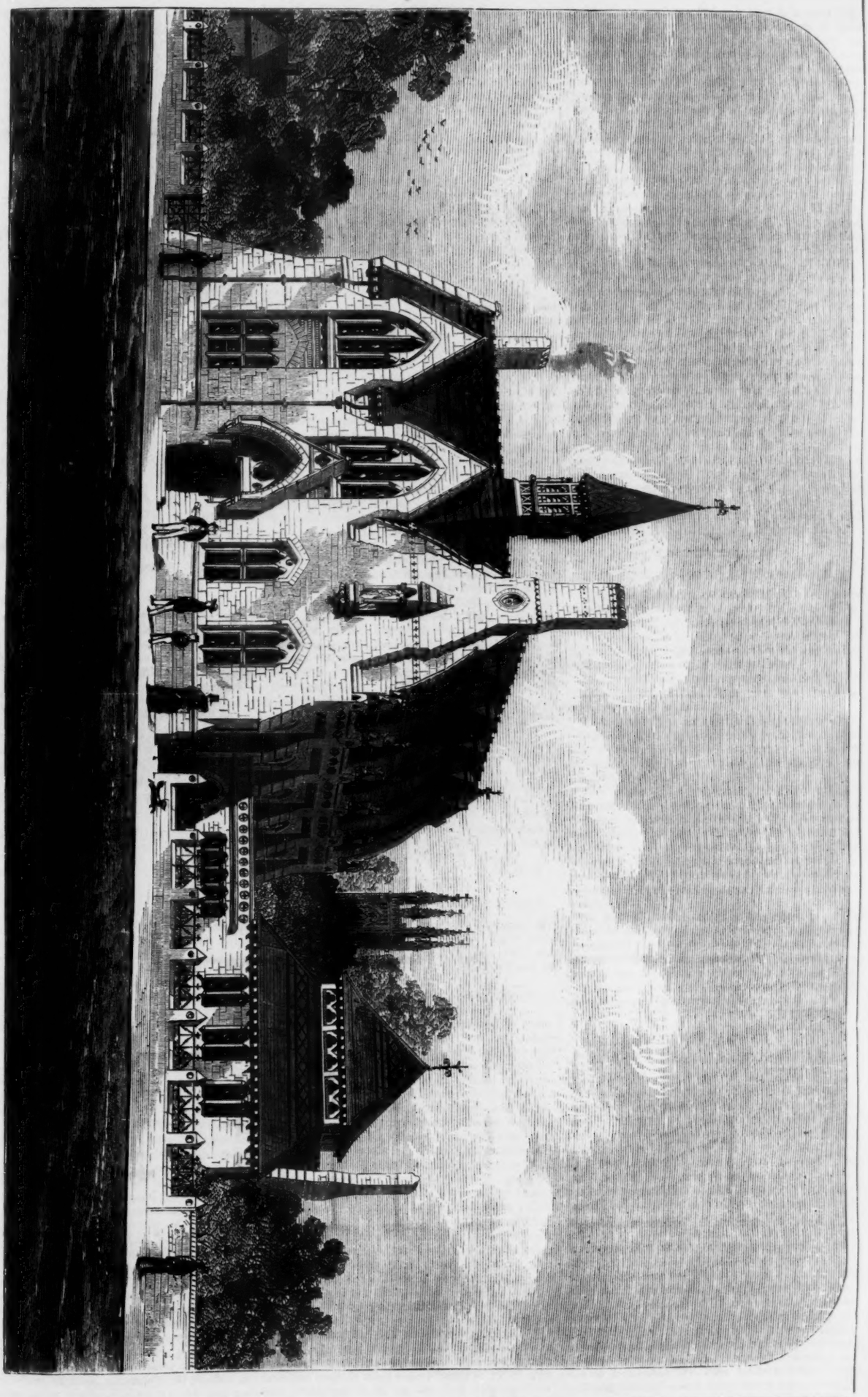
Ailanthus and Cannas. Suggesting the Effects to be obtained from vigorous Specimens of fine-leaved Plants.

SCIENCE AND ART SCHOOLS, GLOUCESTER.



REFERENCES.

1. Museum.
2. Entrance Lobby.
3. Hall and Staircase.
4. Lecture Theatre for Science and Art Schools.
5. Master's and Preparatory Room.
6. Class-room.
7. Laboratory.
8. Stores.
9. Entrance for Science Students.
10. Painting Room.
11. Advanced Class-room.
12. Class-room.
13. Elementary Room.
14. Cloak-room for Ladies.
15. Master's Room.



MUSEUM, AND SCIENCE AND ART SCHOOLS, GLOUCESTER.—MESSRS. FULLJAMES, WALLER, & SON, ARCHITECTS.

SCHOOLS OF SCIENCE AND ART, GLOUCESTER.

WE mentioned in our last issue that the foundation-stone had been laid of buildings, in Gloucester, intended to serve as a Museum, and Schools of Science and Art; and we now give the illustrations promised. The site is on land purchased by the committee, situated between Brunswick-road and Constitution-walk, in the city of Gloucester.

The amount of the contract is nearly 3,600*l*. Many of the leading county men and large firms have already subscribed handsomely, and it will probably only be necessary to state the requirements for advancing so important an educational scheme to induce others to do likewise.

The block of building comprises, on the basement, rooms for the curator, store-rooms, hat and cloak rooms. On the ground floor, a museum, lecture-theatre, class and master's rooms, and laboratory for science students; this latter building being detached, to avoid nuisance from noxious fumes and gases. The first floor will be devoted entirely to the use of the students of the School of Art, and consists of an elementary class, advanced class, painting and master's rooms, with cloak-room and other conveniences.

The roof of the advanced class and painting-rooms is to be constructed of arched iron ribs, with windows so arranged as to admit light without any interruption from wall plates or purlins,—a great desideratum in drawing-schools. The architects are Messrs. Fulljames, Waller, & Son; and the contractors, Messrs. King & Godwin. We understand that in making the excavations the foundation of the old city wall has been exposed. It is composed of large masses of masonry very solidly joined together.

BUILDINGS FOR MUSIC.

SIR,—In the suggestive article on the above subject in the last number of the *Builder*, it appears to me that one point, with regard to the effect of different classes of materials in aiding or impairing the efficiency of a music-room, has been overlooked. Throughout the article it is apparently assumed that the one object to be kept in view in the construction of a music-room is the greatest possible *resonance*,—not merely confining the sound within the limits of the building, but providing against all absorption of sound by the materials composing the floor, sides, and roof, and making all these as much as possible *sound-reflectors*. But whether this is an advantage or not will depend very much on the size of the building. It must be remembered that for a satisfactory musical performance on a large scale we require not only volume and concentration of tone, but also clearness of definition. In a small room there is little difficulty in attaining this, so far as the effect of the room is concerned; and the employment in such a room of the most resonant materials will probably ensure the best effect, by adding an increased volume and brilliancy to the sound, as you illustrate, quite aptly, I think, in the instance of a piano placed in a perfectly bare unfurnished room. And in regard to ordinary-sized music-rooms in general, I quite concur in the remarks as to the insufficiency of glass (in roofs, &c.) as a means of retaining the sound. But in a very large building the case becomes less simple. It is possible there to have too much sound, or to have it too much reflected, because in such a case the distance between the point from which the sound emanates, and the farthest portions of the roof and walls, is so great that the reflected sound is heard at an appreciable interval of time after the original one, thereby confusing and blurring the effect of the composition performed. Speaking with regard to St. James's Hall, you say "it is lined with sound-absorbing media, utterly destructive of pure resonant music, and clear and perfect sound; for what can be the object of producing a loud full note if you must needs deaden it afterwards?" This may be true with regard to a building of the size of St. James's Hall, though I do not consider that at all a bad music-room on the whole; the planning of the orchestra and position of the organ are bad, but that is another matter. But when you come to a building of the size of a cathedral or an Albert Hall, it does become necessary to deaden or absorb the more powerful sounds; not because you do not want the sound (for you want all you can get), but because you do not want the *return* of the sound,—the reflection of it back again after it is supposed to be done with. I had not the opportunity of hearing anything in the Albert Hall until after the *velarium* had been put up; but from all I could gather from the accounts in the papers, it appeared that the defect which led to this being found necessary was, not that the glass roof did not hold in the sound sufficiently, but that its hard concave surface reflected it back into the building too much, and that the *velarium* was placed to absorb some of the sound which before was returned when it was not wanted. I believe I have in a previous letter on a similar subject referred to the case of St. George's Hall at Liverpool, where the materials are nearly all of the least absorbent nature (tiles, hard cement, marb'e, &c.), and where the echo most decidedly and distressingly interferes with the clearness of definition in all loud and elaborate music, and especially with the effect of the organ. In this hall everything sounds best and is best heard when the place is filled with a crowded audience, whose dress absorbs part, though not all, of the superfluous reflected sound.

From this and other experiences, I am convinced that in a very large concert-room it is absolutely necessary to prevent some, at least, of the sound from being reflected, and to use absorbent materials to some extent for that purpose. There is no doubt that such a condition greatly increases the difficulty of constructing a music-hall of large dimensions, which shall be acoustically satisfactory. An increase of power is essential for the production of any grand effect in a great interior; and, at the same time, it is necessary, in order to insure clearness, that the sound shall not be so reflected as to repeat itself to the ears of the audience. These two conditions are antagonistic, and it seems impossible to satisfy one without in some degree neglecting the other,—the moral of which is that it is not desirable to build music-rooms beyond a certain size. Buildings like the Albert Hall, orchestras like that of the Handel festivals, afford opportunities not to be despised, for the attainment of musical effects on a great scale, and for the gathering of a vast concourse of people to hear them; and the Albert Hall, as a music-room, is perhaps as successful as any interior of such extent can be made. But, after all, mere numbers and volume of sound do not make music; and in all these performances on a grand scale, clearness and precision must be more or less sacrificed. The highest class of musical compositions, which appeal to the intellect rather than merely to the ear, will probably be always most intelligibly heard and interpreted by a moderate number of performers, in rooms not large enough to introduce the disturbing element of reflected sound, or what we commonly call "echo."

H. H. S.

THE SELECTION AND USE OF STONE.

SIR,—I have read with much pleasure Mr. Pain's paper on the above subject. Until some of the suggestions advanced by Mr. Pain are adopted, the evils which now exist will not be removed.

With your permission I purpose offering a few remarks as briefly as possible.

I think it will be generally admitted by practical quarry-owners that but few architects understand the nature and quality of the different beds of stone quarried from the aqueous rocks in this country; and it cannot be otherwise until young men who are intended for the architectural profession obtain the desired knowledge by practical acquaintance with the working of quarries, and the nature of the different beds of stone they contain. It is a lamentable fact that the want of this knowledge prevents them from knowing the "bed way" or the "growing way" of many of the best sedimentary rocks: hence how frequently do we find in our public buildings much of the stone, such as plinths, balusters, &c., perishing in consequence of being put in the wrong way of the bed, while the other part of the building is unimpaired by time.

This unfortunate state of things arises in nine cases out of ten from sheer neglect. I could give as many instances as would fill a number of your valuable paper, and must trespass on your space by naming one which came under my notice only last week. The contractors for a respectable building delayed an order for plinth until the masons were nearly ready to fix it. The said plinth was 8 in. on the bed, varying from 18 in. to 33 in. in thickness, and "wanted immediately." Now any one practically acquainted with stone-getting will know that it is very difficult and entails much waste; in fact, it is next to impossible to cut blocks of good stone so narrow on the bed and such a thickness. It may be said, Why not saw them? True; but this takes up time and probably a little extra expense, and as the contractors have had to "cut low," and the building is nearly at a stand, the stone is put in the wrong way of the bed, and if it is good will not be detected by the architect or any one who has not an intimate knowledge of its texture. The result will be that in the course of a few years the weather will expose the delinquency, and the truth will ooze out. Again, a certain stone is specified for a large public building. Tenders are sent in accordingly from a selected number of contractors; and, as your columns will show, a marvellous difference is exhibited between the highest and the lowest. The writer could give instances where some of those tendering never ascertained the cost of the stone so specified; and further can testify that others never intended to use the stone specified, but to substitute one of similar texture but of inferior and cheaper quality. Another great evil is this. It is often known for months previously to stone being required for very large contracts that the supply must come from certain quarries. Notwithstanding, the orders are frequently delayed until the masons are on the ground ready to work it. Hence the orders are then poured in, and the cry is soon raised of "standing for stone." The quarry-master is pressed, and away the blocks are hurried,—good, bad, and indifferent. A strike amongst the men for an advance of wages inevitably follows, all of which trouble might have been obviated by a little forethought and prudence.

STEPHEN SEAL.

THE COST OF CONCRETE BUILDING.

SIR,—Mr. Tall has misunderstood the statements contained in the paper on "Cement Concrete," read at the Architectural Conference.

The cost of cement concrete was stated at from 12s. to 18s., the former exclusive, the latter inclusive, of cost of patent apparatus.

It was also stated in the paper that thin walls could be built, not cheaper, but more expensively, than thick ones.

As regards the cost of the apparatus, I am unable to make any retraction from the statements made before the Conference. It is an expensive item, and cannot be regarded as "builder's plant."

The paper was reported to have said,—"Cement concrete could not be recommended in positions exposed to severe frost." The statement really was this,—"After the cement has set, frost has no influence on it; but during setting it is affected as much as mortar. It was therefore recommended that walls be covered up, and works suspended during severe weather."

To Mr. Tall is due much of the impetus lately given to cement concrete building, and his experience is very large. I am, therefore, sorry to appear to be in antagonism to him; but the facts of my experience are as stubborn as facts usually are; and as I cannot mould them, I content myself with simply stating them.

T. WONNACOTT.

THE LATE MR. GEORGE TATE, F.G.S.

ON the 7th inst. expired, at Alnwick, Mr. George Tate, author of the "History of Alnwick," and the "Sculptured Rocks of Northumberland," reviewed in these pages, besides other works, chiefly of geological and philosophical interest. For the last thirty years Mr. Tate filled the office of postmaster at Alnwick, his native town. For many years he was one of the honorary secretaries of the Berwickshire Naturalist Club; and the scientific and archæological papers he communicated to this society form a large and valuable portion of its printed proceedings. For about thirty years, too, dating from the time he was twenty-three years of age, he was the leading secretary of the Alnwick Mechanics' Institution, which post he relinquished in 1859. His house was the modest centre of the literary and scientific society of the district; and few strangers, who were themselves of note, passed through the town without paying a visit to the local historian. Owing to chronic bronchitis, Mr. Tate made a practice of confining himself to his room, every year, during the winter months; but this care did not prevent the progress of his complaint. During

the bleak winds of the late spring months his health became seriously alarming to his family, though he did not allow it to disturb his usual literary and scientific vocations until quite recently; for a few weeks ago he received, at his residence, the members of a club, of which he was president, and read to them a paper on the Basaltic Rocks of Northumberland. At the time of his death he was sixty-six years of age.

He was buried, with every mark of regard and regret, on the 9th instant, in the churchyard of St. Michael's Church, Alnwick. The local Board of Health, of which he was a member from its formation, and a deputation from the Mechanics' Institute, numbering about eighty of his fellow townsmen, followed his remains to the grave. Those who are specially interested in the histories of British worthies and authors, may thank us for naming that the *Alnwick Mercury* of the 10th inst. gives a full and appreciating sketch of the aims, incidents, and results of his useful life.

THE GIBBS COLLECTION OF ANTIQUITIES AT SOUTH KENSINGTON MUSEUM.

SIR,—I am inclined to think the three harness-plates and hooks numbered 1,248 to 1,248*b*—'70, in Mr. C. R. Smith's catalogue, may be described as distinctly Christian relics. Each plate is ornamented with a cross *patée* between two fish *hauriant*. On the tombs of some of the early Christians buried in the catacombs at Rome a fish is carved, which is interpreted to signify a belief in the resurrection. Bearing this in mind, the two fish coupled with the sign of man's redemption, boldly and unmistakably cut, seem to point to a Christian rather than a Pagan Anglo-Saxon owner. As to dates, we cannot be wrong in supposing them earlier than the year 742, when Cuthbert, Archbishop of Canterbury, introduced the practice of burying in churchyards, which he had seen at Rome; nor, on the other hand, could we fix a later date; for we may conclude the change would soon be made, at least in Kent. In connexion with this, I may mention a fact which is not generally known, viz., that in the year 1853 a Saxon tumbler and a frontal bone of a human cranium, of rather small size, were found in digging a grave in the churchyard at Faversham. These remains were presumably those of some one buried after the ancient cemetery in "King's Field" was disused.

GEORGE BEDO.

NEW MEMORIAL CHURCH AT SKELTON.

THE anniversary of the funeral of one of the victims of the Greek brigands a year ago, Mr. Frederick Vyner, of Newby Park, near Boroughbridge, was selected for the laying of the foundation-stone of a new church at Skelton, near Boroughbridge and Ripon, in memory of that ill-fated gentleman. A mural monument in York Minster records the painful event, and this second memento of maternal affection has just been commenced. Mr. Vyner was the son of Lady Mary Vyner, of Newby Hall, daughter of the late Earl De Grey and Ripon, and cousin and mother-in-law of the present earl. This lady provides the funds. The memorial edifice will adjoin Newby Park. The population is only 300, but the cost will be about 10,000*l*. The edifice will consist of a nave, with north and south aisles, and a chancel. The total length of the building inside will be 96 ft., the nave 40 ft., and the chancel 16 ft. wide. The whole of the chancel will be vaulted over with limestone, to be obtained from Earl de Grey's quarries, and marble columns will be inserted in a series of double tracery to the windows, which is peculiar. The windows will be filled with stained glass. The seats in the nave and the aisles will be of deal formed into panels, with trefoil heads to each bay. The floor will be partly of encaustic tiles and partly plain. The external facing of the church will consist of the Catraig stone, with dressings from the Morcar Quarry. There will be a tower and spire, which will rise to the height of 150 ft., at the north-east angle of the nave. About 230 persons can be accommodated. The architecture of the church is in the style of about 1270. Mr. W. Burges, of London, is the architect, and Mr. John Thompson, of Peterborough, the contractor; Mr. Sier, of London, acting as clerk of the works. It is expected the church will be completed in about eighteen months. It will be named Christ Church.

A LETTER PREPARED FOR MACAULAY'S NEW ZEALANDER.

MEMORIAL STONE-LAYING IN NOTTINGHAM.

THE memorial stone of the new Wesleyan chapel, on Mansfield-road, Nottingham, has been laid by Sir F. Lycett. The chapel is situated at the junction of Woodborough-road and York-street with the Mansfield-road,—a conspicuous position in that locality. According to the plans, the new chapel will be Decorated Gothic in style, and will be built of brick and stone. The ground floor and balcony will seat about 900 persons. The ground-floor of the chapel is elevated from the street, and underneath is a school-room, lighted on all sides, and 76 ft. long, 52 ft. wide, and 14 ft. high, with ample class-rooms in the rear. The building is to cost 3,500*l*. The architect is Mr. Simpson; the builder, Mr. W. Slim; and the masons are Messrs. H. & T. Green, Brothers.

The laying of the memorial-stone excited a considerable amount of interest amongst the Methodists of the town and neighbourhood, and a procession took place, and crowds of people assembled.

The Rev. J. Mason read over a list of things to be deposited in the cyst underneath the stone. We slightly condense what was said as to these:—

The cyst contains the photographs of the ministers of the circuit, of several of the trustees, of the mayor and mayoress, of the sheriff and Mrs. Woodward, of one alderman, and of one councillor. It contains the circuit plan, the General and District Wesleyan Missionary Reports, a copy of the *Nottingham Guardian*, &c. There are are also deposited in it lists of the corporation and board of guardians, and a copy of the Sanitary and Highway Reports. There has been placed in it a list, with sundry specimens, of local manufactures. The cyst contains a silk stocking, made for the Queen. It also contains coins of the realm, but not so many as to tempt a thief. There has been deposited a post-card, purporting to be a note from the manufacturers of Nottingham,—say, if you like, to those who shall live when the millennium of trade and commerce shall come. Some people write from posterity, but this is to posterity, and it reads as follows. The post-card bears on the address side the following:—"To Macaulay's New Zealander, or any other person it may interest, in or about A.D. 2960," and on the other the following inscription was placed in the cyst:—"Greeting! In this, A.D. 1871. We, Lace Manufacturers of Nottingham, whose productions are placed under this memorial stone, to interest the future antiquary, are paying to our workmen an average of 4*l*. per week each man; a new Levers' twist-machine cost us about 600*l*.; the price of cotton yarn ranges from 1s. 6d. (No. 50) to 20s. (No. 150) per lb.; the price of silk, prepared, from 16s. to 50s. per lb. There are about 4,000 machines engaged full time,—that is, twelve to twenty hours per day,—in the production of laces and edging of various kinds, and plain and fancy nets."

LICHFIELD.

THE chapel of the Hospital of St. John Baptist, in this city, which has been undergoing restoration, has been re-opened. Of the early history of this priory or hospital, much is involved in obscurity, though there is little doubt that it was founded in the reign of King Henry III. It was a priory of friars in 1334, and very ill conducted. During the episcopate of Bishop Smyth, the house was refounded, and its constitution altered. Within the three first years of his consecration he rebuilt the hospital, and established such rules and ordinances as were adapted to the new and extended plan of the institution. The statutes are dated 1495. The chapel, which is chiefly of the Early Decorated period, originally consisted of a nave only, 64 ft. long, by 18 ft. in width, to which the Rev. Chancellor Law (then the master of the hospital), in the year 1829, made the addition of a north aisle, with a gallery. To effect that alteration, the whole of the north wall, with the exception of a few feet at the eastern end, was taken down, and that part of this wall which was rebuilt, westward of the aisle, was of considerably reduced thickness.

In the work of restoration now accomplished, it was found necessary to strengthen the walls, north as well as south, the former being increased to its original thickness. The gallery was removed, and an arcade of stone, in three bays, carrying the wall above, and separating the aisle from the nave, has been constructed. An organ gallery at the western end was also taken down.

The south wall which possesses the only architectural features of the ancient structure, was by far the most dilapidated. Part of this wall has been entirely rebuilt; much of the remaining portion has been recased with stone both internally and externally; massive buttresses have been added; some of the openings have been reconstructed, and others have undergone effectual repair. The west wall internally has been cased with stone.

The roof which was in so extremely dilapidated a condition as to render it dangerously insecure, has been replaced by one (of the pitch it originally had) of open timbers, wrought and stained, covered with Broseley tiles, and plastered between the rafters.

The pulpit, which is given chiefly by the ladies of the congregation through the instrumentality of Mrs. Webster, is built of Caen stone, with polished marble shafts to the columns of the niches. The carving of this, as of other parts of the church, has been executed by Mr. Samuel Wood, of Lichfield, and the wood-carving by Mr. Banister. A new organ by Nicholson & Son, of Walsall, has been placed in the chapel. The work has been carried out by Messrs. Beckett & Thorneloe; and Mr. W. H. Crompton, of Lichfield, was the architect.

NEW PLASTIC MATERIAL.

MR. JAMES CHRISTIE, sculptor, of Broughty Ferry, by Dundee, after many experiments, has succeeded in producing a new plastic material which will facilitate and improve the production of original designs applicable to a variety of artistic purposes. A vase, an ornamented panel, a figure-piece, &c., of Mr. Christie's workmanship in this new material are to be seen in the London International Exhibition. It has been the practice among sculptors to embody their conceptions in clay, and a very good material for the purpose it is, in some respects; but it is not without its defects, and those frequently of a very vexatious kind. If the model in clay be allowed to dry, it contracts out of form; and if it have "supports," it crumbles to pieces. The model must therefore be cast in plaster before it has had time to dry. This process, being both laborious and disagreeable, is often entrusted to other less appreciative hands than the artist's own; and the chagrined sculptor stands aghast when he sees his work defaced and changed, owing to the unsparing use which the operator in plaster has made of his scraping tool, his sand-paper, and his Dutch ruche. In Mr. Christie's new plastic every touch consolidates as the sculptor leaves it, and the model gradually becomes hard as stone, and that without the slightest twist or contraction.

NEW SAW MILLS, LIVERPOOL.

THESE works, lately completed for the British Timber Company, at a cost of 40,000*l*. and now in working order, are of an extensive character. The site is opposite the North Carriers Dock, Bootle, and is two acres in area; eight millions of bricks were used in construction; the masonry, carpentry, iron work in girders, columns, roofing, and fireproof construction, are of a substantial character. Style of architecture, Italian. The general plans and working details were prepared by Mr. W. H. Stead, architect, and the contracts were carried out by Messrs. Burroughs & Sons, contractors, Liverpool. The buildings erected comprise general offices, with a frontage of 138 ft. by 45 ft. deep, having a bold entrance stone archway, and dental cornice, supported upon strong iron pillars, having over the centre "Britannia," in bas relief. The mill proper is 160 ft. by 63 ft., with engine-house, boiler-house and chimney, extensive warehouses, hoists, and bending department, 164 ft. by 32 ft., including workmen's dining-hall and gate lodges, and for the effectual working of these premises, four lines of overhead steam travelling cranes are erected.

ARCHITECT FOR THE SHEFFIELD SCHOOL BOARD.

AT a meeting of the Sheffield School Board, on the 8th inst., the Board proceeded to the election of an architect and surveyor, at a salary of 100*l*. per annum and 5 per cent. on the cost of works done. There were fifteen candidates:—Mr. C. J. Innocent, Mr. T. J. Flockton, Mr. J. D. Webster, Mr. H. D. Lomas, Mr. J. B. Mitchell-Withers, Mr. G. Pocock, Mr. W. J. Marsden, Mr. J. Fawcett, Mr. Scargill, Mr. T. Hind, Mr. S. L. Swann, and Mr. J. Hall, all of Sheffield; Mr. J. Shaw, Leeds; Mr. E. M'Dougall, Rochdale; and Mr. E. M. Gibbs, London. In the first voting Mr. Innocent received 7, Mr. Flockton 5, Mr. Webster 1, and Mr. Lomas 1 vote. In the second voting Mr. Innocent received 9, and Mr. Flockton 5 votes.

Mr. Allott proposed and Mr. Fairburn seconded the appointment of Mr. Innocent to the office.

A discussion arose as to the precise duties to be included in the salary offered, but eventually it was decided to make the appointment under the terms set forth in the advertisement. The motion appointing Mr. Innocent was unanimously adopted.

APPLICATION OF CONCRETE.

MR. J. W. BUTLER, Willesden, has patented a mode of "applying concrete." This consists in the application and use to structures of moulded artificial stone or concrete in the form of hollow blocks of cylindrical or other configuration, or of segments thereof. The moulding may be effected in wooden or metal moulds, the core being made in segments temporarily held together whilst the concrete is being moulded, and the core is withdrawn from the mould in separate parts or segments. When a number of moulded concrete cylinders are required to be placed one on another, as for example in cofferdams, it is proposed to secure them at their points of junction by means of fish-pieces bolted or otherwise held in position. A hollow metal shoe made in segments is to be fitted to the bottom cylinder to facilitate the sinking of the same into the ground. This reads to us like a step away from the right application of concrete.

THE ARCHITECTURAL CONFERENCE.

ONE of the gentlemen who read papers, Mr. Rolfe, is not pleased that we used the title given to his paper in the official programme, because, he says, what he was requested to write upon was, "the Bearing of the Purchas Judgment on Symbolism and Art," and that before commencing the paper he mentioned the error that had been made. Omitting what we are forced to call the nonsense (for example, the assertion that we were "sneering" at "doctrinal truth" when we recorded good-naturedly that the meeting did not seem to regard the precise length of the communion-table so seriously as Mr. Rolfe did), we will let him speak on that subject for himself:—

"The line of my argument was this. By the judgment in question, an ancient faith of the Church (dating back even to Apostolic times) was contravened by an attack on its art and symbolic accessory, and that it was possible to compensate in some way for this blow on ecclesiastical art by a more symbolic treatment of other art-work which would aid in the sustentation of the ancient faith alluded to. This you must surely admit, as did our chairman, Mr. Beresford Hope, to be no digression from the subject. On this point I then remarked and illustrated by example, that in the very dimensions of an ancient altar symbolism could be traced, and advocated therefore that we architects should infuse a similar symbolic spirit into the minutest detail of all sanctuary work, even in the dimensions of the altar itself. I *did* recommend my brother architects in no case to carry out an altar less than 7 ft. 5 in. long (both symbolical numerals), and when possible to exceed this length to let the mystic number 5, so closely associated with altar ritual, determine *in the inches* the exact length of the slab. This, sir, is a somewhat different version of the matter to the statement of your correspondent. The Church has now in this nineteenth century as great a need as ever of that peculiar aid which the architect alone, of all laymen, can lend her; for in all previous periods of Church history an architect in his work has been the means of bearing testimony to, or of showing his disregard for, the truths of Catholicism; and those professional men nowadays who despise and ridicule that pure symbolic spirit which actuated our forefathers in their church-work, and probably substitute for it that £. s. d. money-grubbing spirit of the age, are alike *unfit* and *unworthy* of being engaged on any modern church-work whatever.

* * * *

With regard to the Conference in general, I will also add a word. It has decidedly been almost, if not quite, a failure. What is the utility of bringing a body of professional men together in this way from different parts of the kingdom, if they simply read to each other, and talk, *and literally agree to nothing important among themselves?* During the four long meetings which I had the pleasure of attending, but one formal resolution was submitted to the Conference, and about that there was some demur. I see also from the accounts of the later proceedings that little else was then done beyond this reading and talking. Indeed, not one important matter was so definitely settled by vote of a majority as to sanction its being in after years alluded to as the decision of the general conference of architects in 1871. What, then, I repeat, has been the utility of this Conference? The president, at the opening meeting, gave it clearly to be understood in one of his remarks that some resolutions would be submitted to us, but as to their nature, or when they were to be brought forward, we were left quite in the dark. At the afternoon sitting on the Tuesday I rose to call the chairman's attention to this fact, and suggested that whatever resolutions were to be brought before us should be publicly announced some time before they were actually moved; and I remarked also that it would be desirable to have them posted up on the entrance-doors of the Institute, or in some other equally conspicuous place. The chairman of that sitting thereupon said that he believed the president had no idea of carrying out his intention with regard to the said resolutions, or used words to this effect. I cannot repeat his exact words. So that actually one excellent chairman was reversing, on a *most important subject*, the remark of the excellent chairman who preceded him. Many of the papers were only read in part. As one member remarked, a screw pressure seemed to be put upon everything read or said. In fact, things seemed to be quite *muddled*, and I am sure many members will entirely agree with me in this remark."

CLAPTON C. ROLFE.

THE TRADES MOVEMENT.

Newcastle-upon-Tyne. — Nothing gives the least hope of a speedy settlement of the great strike, and the determined stand of both parties unfortunately augurs a prolonged dispute. The principal works, such as Messrs. Hawks, Crawshay, & Company's, seem to have lost their natural activity. The pattern shop contained two boys when visited, while the two large foundries had only one man between them. The boiler yard was totally deserted, and other parts of the factory were standing idle. Mr. George Crawshay, the head of the firm, had given instructions that no man who had allied himself with the strike should be taken on again.

West Hartlepool.—Summonses issued against a number of the carpenters in the employ of Messrs. Denton, Gray, & Co., shipbuilders, for neglecting to fulfil their several contracts, whereby the complainants allege that they have sustained damage to the extent of 20*l.*, were made returnable at the West Hartlepool Petty Sessions, but as none of the defendants appeared warrants were issued for their apprehension.

Lincoln.—The stonemasons and bricklayers of Lincoln have turned out on strike, the masters having refused to accede to their demand for an increase of 1s. per week in the rate of wages, and the reduction by two and a half of the hours of labour on Saturday.

Rotherham.—The painters' strike is now at an end; the masters have refused to grant the further advance of ¼d. per hour, but the men resume work on condition that the advance shall be granted on and after June 1st, 1872.

Merthyr.—In South Wales nearly 20,000 men have struck work. These are principally the seacoal colliers from the Ferndale and other districts of the Rhondda, and also a considerable number from the Aberdare Valley. Large meetings are held daily. The enginemen and firemen gave notice, and a disturbance broke out at Treammaw, an extra police force being sent for to quell it. Sad doings; bringing injury and loss to all.

COMPETITIONS.

Charlton (Dover) Cemetery.—In answer to the advertisement inserted in our columns a short time ago, inviting designs for the erection of buildings for the proposed new cemetery for Charlton parish, forty-six sets of designs were sent in to the Board. After consideration, the Board has awarded the first premium, of 25 guineas, to Messrs. J. H. Brown & J. B. Pearce, of Norwich; and the second premium, of 10 guineas, to Messrs. Hayward & King, of London.

Proposed Covered Market for Kendal.—The corporation of this town having, a short time ago, advertised for plans and estimates for fish and poultry markets, and three designs being sent, they have awarded first premium, of 5*l.* (!), to Mr. Eli Cox, second to Mr. Shaw, and third to Messrs. Brade & Smales.

Salford Union Workhouse.—The competition for the extension of the Salford Union Workhouse, by the erection of new buildings to accommodate 500 children, has resulted in the selection of the designs by Messrs. Medland & Henry Taylor, of Manchester, architects.

West Bromwich Town-hall and Library.—The first premium has been awarded to Messrs. Alexander & Henman.

Drawings for the Municipal Buildings, Leicester.—Some prospect appears of progress being made towards Leicester obtaining the much wanted, and long talked of, municipal buildings; the competitive architectural drawings being now placed in the Corn Exchange. They will be inspected by the members of the Corporation on Monday; and during the remaining days of the week the public are to be admitted to view them. An architect has been appointed to report upon the most suitable drawings for the object in view.

BUILDERS' ACTIONS.

Kimberley v. *Dick and W. White.*—In this case, heard in the Rolls Court, Mr. Kimberley, contractor, proceeded against Mr. Dick, for whom he had built a mansion in Wicklow, and the architect, Mr. W. White, for a very large amount of extras beyond the contract, which was made under peculiar and curious circumstances. We have reports of the proceedings before us, but as the decision had not reached us at the time of writing this, we think it better to defer comment, in justice to both sides.

NEWBURY DISTRICT FIELD CLUB.

THE antiquaries who form this club have made their first excursion this season. They drove a distance of nearly fifty miles, in order to view several spots of antiquarian interest in the district of Lambourne and White Horse-hill, starting from Speenhamland about 9 a.m., and not returning until a little past midnight. Notwithstanding the drawbacks experienced from the weather, and the fatigue produced by a cross-country ride of more than forty miles, with an occasional walk up some steep hill, or a ramble over the slippery downs, all who composed the party seemed well pleased with their day's engagements. The party, including several ladies, left the Pelican yard in brakes, and they visited Lamborne, where they afterwards lunched, and then went to the Blowing Stone or Alford's Bugle, the Ridgeway, White Horse-hill, Uffington Castle, Wayland Smith's cave, &c. They dined at Ashdown Park, where a paper by Mr. Thomas Hughes, M.P., on "Berkshire in A.D. 871," was read. Alford's camp was visited, and the party then returned homewards.

BUILDERS' FOREMEN AND CLERKS OF WORKS PROVIDENT INSTITUTION.

THE annual dinner of this institution was held on Thursday evening, the 8th, at the London Tavern, under the chairmanship of Mr. E. l'Anson, vice-president of the Royal Institute of British Architects. Among those present were Messrs. J. Taylor, Cubitt, Jackson, Shaw, Pry, Hall, Trollope, C. and J. l'Anson, Townend, White, Brass, Dunnage, Fraser (treasurer), &c.

The institution has been in existence for twenty-nine years. There are seventeen pensioners upon the funds, among whom 205*l.* were distributed last year. A sum of 56*l.* was also given in temporary assistance.

The Chairman, in proposing the toast "Prosperity to the Institution," remarked that he had often observed with satisfaction the thoughtfulness of mind and carefulness of hand evinced by those engaged in the building trade, and when it was considered how much depended upon the ability of those to whom was entrusted the working out of the details of designs upon which so much depended, it must be admitted that the subject was not unimportant. He had observed with much pleasure the great increase of self-respect and refinement which had marked the progress of the working classes in recent years. There had been greater striving after perfection, and no doubt the new Education Act

would greatly facilitate additional progress in that direction.

Mr. George Plucknett responded, and remarked upon the fact that a unity of interests between all branches of the trade, including masters, workers, and professionals, was of the utmost importance to the carrying out of every notable commercial work; and in none was this more markedly shown than in the building operations to which such a great impetus had been given during the past few years.

The toasts of "Architects and Engineers," "The Chairman," "Builders and Contractors," "The Press," were duly proposed and responded to by Mr. Robinson, Mr. Stirling, Mr. Macey, Mr. Bovill, Mr. Graham, and others. The amount of the subscriptions was considerable.

NOTRE DAME, PARIS.

JUNE 7TH, 1871.

AGES have swept o'er thee, thou sacred fane!
And with the tide of time, a mighty wave
Of shadowy forms descending to the grave
Has fill'd these minster-crowned banks of Seine.
Many a stately, many a solemn march
Has pass'd in long procession 'neath thine arch,
While softly sweet the funeral dirges rang,
And blended voices mournful requiem sang.
But, ah! the grief, the heavy gloom, to-day,
All older griefs do mightily outweigh,—
When he, who faithful to his latest sigh,
Is borne within those twin grey towers to lie;
Seeking beneath their silent shade for rest,—
A hallow'd memory, and a saintly guest.

M. Y. F.

BIRMINGHAM CORPORATION COMPETITION.

SIR,—"C. W. C." informs you that the Town Council has been summoned for the 13th inst. to decide upon the plans. This is false; and to satisfy you that it is so, I have borrowed, and enclose, the summons containing the business which alone can be transacted at that meeting. The business of the plans is not mentioned.

As I said in my former note, a resolution was, on 23rd May, passed, fixing the 13th of June; but the MS. of that resolution has been privately altered, in a handwriting not wholly unfamiliar to "the local intriguer," and the business is thus postponed.

It is now fixed for a meeting to be held on the 20th of June, *after the discussion on the sewage question*, which is not unlikely to last *a month or six weeks*. FAIR PLAY.

THE DURABILITY OF WROUGHT AND CAST IRON.

SIR,—For some few years past it has become general with scientific men, such as architects, engineers, builders, and others, to use most commonly wrought-iron girders or bearers to sustain weights of all magnitudes, exposed or otherwise to the changes of atmosphere,—also in damp situations. Formerly, before the process of rolling became so well known, cast iron was made use of in all cases for the above-mentioned articles. It is my opinion that in perhaps less than fifty years the major part of wrought-iron girders used to form and support bridges, or to exposure, will become deteriorated in the footings through oxidation,—reduced in size, consequently weakened. As a proof of the wasteful properties of wrought-iron, examine iron railing of long standing or the inclosure of old monuments. In most cases it will be found that the upright bars or posts are quite decayed at bottom, and some persons have said it arises from the want of paint. True, an outside coat of paint may be a preservative for a short period, but will not prevent oxidation, as paint not uncommonly comes off the iron in scales or blisters; and, even if paint adhered to iron, there is not that durability in wrought as in cast iron, because in the process of converting cast iron into the wrought, by means of puddling, squeezing, hammering, rolling, &c., the iron loses its preserving properties in the shape of dross or slag, which, if allowed to remain in the body of the metal, would act as its preservative; but by losing the properties alluded to reduces its bulk, and hence, with the expense in conversion, makes wrought iron more expensive in the bar than pig iron. By the same rule, steel fetches a much higher price than wrought iron. In melting iron ore, a flux is used for the purpose of causing the dross or slag to become fluid and more easily separated from the metal. So long as cast iron is kept in a fluid state a scum or dross continues to float on its surface, even if frequently skimmed.

Without a doubt wrought iron is commonly used for the purposes before mentioned in consequence of its making a lighter article to sustain the same weight; but for durability there is no comparison with the original or cast iron. It is well known that the main ingredients composing all paints are minerals, such as lead, ochres, &c., and the dross from iron is of the same nature. It is not generally known that cast iron and glass are two of the most classic hard bodies in use. H.

Books Received.

The Dark Blue is taking better "form." The June number is quite up to the average of similar publications.——*The People's Magazine* contains an *apropos* paper on "Handel Festivals and his Music." The writer says,—

"It may not be well known that in the Middlesex Hospital there is a ward called 'Handel's Ward.' To this the great musician gave 1,000*l.*, his usual generous aid; and although that very meritorious institution has, from the severity of the times, been compelled to close some of its wards, yet 'Handel's Ward' remains open, notwithstanding it is, as one devoted more especially to cases of cancer, unusually expensive." Again,—"It would also be a somewhat astounding, as well as a curious computation, if all the sums of money raised by performances of the 'Messiah' could be estimated in one total. If to this the amount for the sale of the oratorio, complete or in detached portions, and the various arrangements, &c., of its songs and choruses, in all forms, could be added, it would probably be found that no single work of human imagination ever drew so largely upon the purse of society."

——The current number of the "*Art Journal* Catalogue of the International Exhibition" includes illustrations of several of the pieces of furniture reviewed in our last issue.——In the *Leisure Hour* the editor continues his "Impressions of America and its People," and Mr. John Timbs his interesting "Autobiography."——Mr. Hardwicke has published, as usual, his "House of Commons," "Peerage," "Baronetage," and "Knightage," each for a shilling,—cheap and useful.——"Hoppus's Measurer. Edited by William Richardson. London: Warne & Co." This is an enlarged and revised edition of the excellent old Hoppus.——"Tables for computing the Contents of Earthwork in the Cuttings and Embankments of Railways. By William Macgregor. London: Spon." These tables seem to be simple and expeditious, and the arrangement of them convenient, so that the depths can be taken to the tenth of a foot.——"The London Saturday Half-holiday Guide: The Free Exhibitions of London." A cheap guide, containing a good few particulars as to the British Museum, South Kensington Museum, National Gallery, Portrait Gallery, and other free museums and galleries; as well as some notes as to the International Exhibition and Albert Hall, Westminster Palace and Abbey, and St. Paul's, Crystal Palace, &c.

Miscellanea.

Lecture on Egypt, at Stafford House.—Professor Owen has delivered a lecture on Egypt, in aid of the funds of the Ladies' Association for the Social and Religious Improvement of the Syrian Females. Stafford House had been kindly placed at the disposal of the association for the purpose by the Duke of Sutherland. The lecture was delivered in the central hall of the mansion, the learned professor standing at the top of the first flight of steps, and the audience, which was numerous, being seated in the hall, on the staircase, and in the gallery in front of the lecturer. The association maintains thirteen schools at Beyrout, four in Damascus, and six at Lebanon, which are attended by a total of 1,590 scholars, and employ the services of 41 teachers. The Ellesmere Memorial School, at Hasbaya, Mount Hermon, has just been completed. A site has been offered in the street which is called "Straight," in Damascus, where the lease of the present school is about to expire. After the lecture the company paid a visit to the picture-gallery, and had the opportunity of examining a mummy which had lately arrived, and from which the bandages, placed round it 2,700 years since, had not yet been removed.

Northamptonshire and Leicestershire Architectural Societies' Meeting. — A general and united meeting of the Architectural Society of the Archdeaconry of Northampton and Leicestershire Architectural and Archæological Society was held on Tuesday and Wednesday in last week at Uppingham, under the presidency of the Rev. Lord Alwyne Compton, rector of Castle Ashby. The meeting was more than ordinarily well attended, and was one of the most successful the societies had ever held. The little town of Uppingham heartily welcomed the societies, and the inhabitants showed their interest in their work by a good attendance at the Museum and the public meetings in the large school-room. The inaugural proceeding was a public meeting in the large school-room. There was a large audience, including the boys of the school. The party had excursions to Ayrton, Preston, Lyddington, and Stoke Dry, after which a public meeting was held in Uppingham; and next day Seaton, Harringworth, Laxton, Blatherwycke, Bulwick, Deene, Kirby Hall, and Rockingham were visited. Papers were read, and remarks made on various subjects of interest.

The Conversazione of the Institute of Architects.—The annual *conversazione* for 1871 will be held at the rooms of the Institute, on Thursday, the 29th of June.

Waste Lands and Surplus Labour.—The fourth of the series of meetings given under the auspices of the Labour Representation League, at the rooms of the Century Club, 6, Pall-mall-place, for the discussion by working men, members of Parliament, and other gentlemen, of important social and political questions, has been held; Mr. Thomas Brassey, M.P., in the chair. The subject for consideration was "Waste Lands and Surplus Labour," and the discussion was opened by Mr. George Howell, who was followed by Messrs. George Potter, R. M. Latham (president of the Labour Representation League), Frederick Hill, Lloyd Jones, Montague Chambers, M.P., Frederick Young, Weston, Thomas Webster, Q.C., Captain Maxse, R.N., and others. The general feeling expressed was in favour of legislative action for the purpose of employing surplus labour on the idle lands. The view taken in course of the discussion was that there are in the country upwards of 31,000,000 acres of unprofitable land, of which at least one-third might be profitably used for the growth of human food, by employing the surplus labour thereon, and the present annual cost of maintaining which, it was declared, is more than 10,000,000*l.* sterling.

Croydon Irrigation and Farming Company (Limited).—The directors report that, notwithstanding the difficulties they have had to contend with during the past year, in consequence of receiving over from the Croydon Local Board of Health the lands at Beddington in a very unsatisfactory condition, also, in consequence of the late period of the year when they were enabled to take possession and the personal management of the undertaking, the business has been satisfactory. The profits of the year being 608*l.* 6*s.* 6*d.*, out of this sum the directors recommend the declaration of a dividend at the rate of 15 per cent. per annum, free of income-tax. The directors further report that, in consquence of being about to acquire an increased area of land for their operations, and also to manufacture a portable manure, from the solid sewage, they have decided to issue the remaining shares, which will be offered in the first instance to existing shareholders, *pro rata*.

The Conversazione of the Institution of Civil Engineers.—The *conversazione* given by the president of the Institution, Mr. C. B. Vignoles, F.R.S., on Tuesday, in last week, was attended by more than 800 engineers and scientific men. The visitors were received by Mr. Vignoles and the council of the Institute in the library, which was converted into a picture-gallery. On the present occasion, selection was made of such paintings and drawings only as had direct reference to engineering subjects. The pictures were a success, but the same can hardly be said of the models and machines which were collected in the lecture-theatre of the Institution. The International Exhibition had absorbed almost every scientific novelty brought out since the last *conversazione*. But although the exhibition did not reach in this respect the standard of previous years, it was both interesting and satisfactory. Some of the exhibits were duplicates of those in the International Exhibition.

Pateley Bridge, Yorkshire.—Last week an incline railway was commenced, which will connect the North-Eastern Railway at Pateley Bridge with the flag and landing quarries on the top of the hill on the north side, and about 1,200 yards' distance from the railway. These quarries have long been noted for the large sizes of the landings which can be obtained, as well as for the hardness of the stone, but being at an elevation of 600 ft. above the railway, the quarries have only been worked to a limited extent. Mr. Hodgson, engineer to the North-Eastern Railway, has prepared plans for an incline, getting over the difficulty of such a steep gradient. The whole range of rock on the top will be opened out by Messrs. J. & G. Metcalfe, the owners, which, when completed, it is expected will give employment to over 200 men, and be a benefit to the town and district.

The Bath Abbey Church Restorations.—The committee state that the progress has been so material, that the *completion* of this useful, interesting, and religious work is now clearly in view. The restoration of the choir, the appliances for warming and lighting the whole of the church, and the entire re-seating, are now all that remains to be done. For these works, with other contingencies, the sum of 5,000*l.* will be required.

Warnings and Examples to Workmen's Clubs.—In the form of a tractate, published for the Working Men's Club and Institute Union, 150, Strand, Mr. Hodgson Pratt gives some useful information, under the title of "Notes of a Tour among Clubs; or, Warnings and Examples, including a Notice of the Trades Hall at Liverpool and the 'Model' Club at Wisbech." Mr. Pratt found the admission of idle and noisy apprentice lads, attracted by bagatelle or other games, a great evil in workmen's clubs, and a cause of failure. On the subject of pecuniary and permanent success, he says that workmen "have only to combine in order to render such places of resort as profitable in a pecuniary sense as they will be in a moral, social, and intellectual point of view. To do that, however, they must make a "business" of such institutions, and supply their members with refreshments for the body as well as for the mind, and in many places with lodging accommodation also for the benefit of members travelling in search of work. This is the true way to supplant the public-houses and terminate the enormous miseries they produce. The workmen will at the same time put a large portion of the publicans' profits into their own pockets for the benefit of their families. The Bill now passing through Parliament will overcome the great obstacle which has hitherto prevented the trade societies from establishing their own halls, institutes, and boarding-houses for workmen out of employ, because it will enable them, *if they register*, to hold property."

Health and the Spectroscope.—We learn from the *Quarterly Journal of Science* of a most ingenious use of the spectrum analysis, which will doubtless suggest the usefulness of extending its application to the elucidation of many inquiries, where it has heretofore not been appealed to. The case referred to is substantially as follows:—The water used by the inhabitants of a crowded court, amongst whom several cases of typhoid fever had appeared, was drawn from a rather shallow well, and was highly charged with various unoxidized compounds of nitrogen. It was suspected that, from some defect, the contents of a public urinal obtained entrance to the well. The fact that the well-water contained seven times as much common salt as the normal water of the vicinity was some confirmation of the suspicion. Professor Church obtained absolute proof by the following method:—He introduced two grammes of a lithium salt into the urinal, and, two hours later, was enabled readily to detect with the spectroscope the presence of lithium in a litre of the well-water, which by previous examination had shown no trace of this substance.

A Scott Statue for New York.—The Scottish societies of New York having recently resolved to place a statue of Sir Walter Scott in the Central Park of that city, they have arranged with Mr. John Steell, R.S.A., of Edinburgh, for a copy, in bronze, of the well-known marble figure in the Scott Monument, Prince's-street, Edinburgh. The statue will, it is expected, occupy an important site in the park at New York, and will be placed on a pedestal of Peterhead granite, designed by the sculptor, and sent out from this country. Bronze statues of Shakspeare, Schiller, Goethe, Humboldt, and others, by eminent artists, and cast in Berlin, Munich, Vienna, Rome, and other Continental cities, also adorn New York's chief pleasure-ground. The negotiations as to the Scott statue were arranged through the Atlantic cable.

Proposed New Drinking Fountain for Brighton.—The Works Committee of the Brighton council have considered the design and plan of the drinking-fountain proposed to be erected, by Mr. Chatfield, in the centre of the open space in front of St. Peter's Church, and have instructed the surveyor to construct a skeleton of the proposed fountain on the site. This skeleton model has been erected nearly opposite the Gloucester Hotel. It is an obelisk in shape, about 20 ft. in height, and will be surmounted by a triple-lamp; the base being two quarters of a circle, forming, we believe, two reservoirs from which cattle can be watered.

New Street from Oxford-street to Charing-cross.—At the last meeting of the Metropolitan Board of Works, the order of the Board of the 26th May last as to one-half of the estimated net cost of the formation of the Euston, St. Pancras, and Charing-cross Railway Company, and of a new street from Tottenham-court-road to Charing-cross, was agreed to.

The New Orphan Home at Cambridge. The chief stone of this benevolent institution has been laid. The proposed building will stand in the Fitzwilliam-road, Brooklands. It is intended to accommodate only twelve children. On the ground-floor are the day-room, the kitchens, washhouse, pantry, store-closet, &c., and on the first-floor are six bedrooms. The size of the building is 42 ft. by 19 ft. The walls of it are to be of light-coloured brick, varied by the intravention of courses of red brick. The heads and sills of the windows, as well as the plinth course, are to be of Box stone. The mullions and framing of the windows will be of wood, stained and varnished. The design is of a plain character, suitable to its purpose; but every consideration will be given to ventilation and convenience. The architect is Mr. Talbot Bury, of London; the builder is Mr. Laughton, of Cambridge.

Society of Biblical Archaeology.—At the last meeting of this society, Dr. Samuel Birch in the chair, Mr. George Smith, of the British Museum, read a Paper on the "Early History of Babylonia, commencing with a *resumé* of facts already ascertained by the labours of Sir Henry Rawlinson and others. He proceeded to describe *seriatim* the principal localities where excavations had been undertaken, and to identify them with many of the cities mentioned in the older Books of the Pentateuch. Mr. J. W. Bosanquet read a Paper "On the Date of the Nativity," considering in detail the facts of that occurrence, and of the government of Cyrenius and the Census of Cæsar, as recorded in the Gospel, and by Josephus. The various eclipses and astronomical data incidentally connected with these events, were enumerated, and the author, reasoning from all together, was disposed to believe that the birth of Our Lord took place either in the autumn of the year 3, or the spring of 2, before the Christian Era.

South London Workmen's College.—From a printed statement for 1868 and 1869, as to the college opened at the beginning of 1868, for the purpose of trying how far a system of superior education offered to the working classes might be made self-supporting, it appears that it has been found possible to obtain competent teachers for 80 per cent. of the class fees fixed at a rate within the means of working men,—3s. 6d. per term of three months. A night-school for less advanced students is also taught for 80 per cent. of the school fee, which is 6d. per week; but in this case there are no entrance or term fees. If the college has become self-supporting in three years, with the exception of rent, the principal, Professor Huxley, proposes to make an appeal for the purchase or erection of a suitable building.

The Park-lane Improvement.—People are naturally complaining that after securing a fine opening from Piccadilly, through Hamilton-place to Park-lane, some authority has caused or allowed to be erected, immediately facing Hamilton-place, a horse-trough and drinking-fountain. The object gained by opening Hamilton-place is thus nullified, and it is surprising that the authorities should have allowed it to be placed in so crowded a thoroughfare. That it must be removed to some less inconvenient site is evident. Its present site is no place for pulling up horses and still further crowding the traffic and undoing all that is done. It is astonishing how little brain-work is brought to bear upon our "improvements."

Hard and Soft.—In the *Journal of the Franklin Institute* for March is an interesting account of Mr. H. C. Tilghman's process for cutting hard bodies with substances softer than themselves. A jet of quartz sand, for example, thrown against a block of corundum soon pierces a hole. Sand driven by a blast of air of the pressure of about 4 in. of water rapidly grinds glass; and at a meeting of the Franklin Institute numerous experiments were made showing several very beautiful and useful applications of this process. Amongst other things it has been used for engraving on glass, photographic pictures formed on films of gelatine with the bi-chromate of potash.

The Law Courts Site.—The *Morning Post* says that the select committee to whom the Bill for acquiring additional land for the site of the new Law Courts was referred have resolved, without hearing counsel for any of the parties interested, to refer the Bill back to a committee of the whole House.

The Prince Consort's Prize; Society of Arts.—The Prince Consort's prize of twenty-five guineas has been awarded to Thomas Dawe, aged 20, Devonport Mechanics' Institution, clerk, who has obtained the following first-class certificates:—

1868. Arithmetic, first-class certificate; navigation and nautical astronomy, first-class certificate, with first prize; mensuration, first-class certificate. 1869. Book-keeping, first-class certificate; algebra, first-class certificate. 1870. Metric system, first-class certificate, with first prize; domestic economy, first-class certificate, with first prize. 1871. Logic, First-class certificate, with first prize; English History, first-class certificate, with first prize; political economy, first-class certificate, with second prize; geography, first-class certificate.

Telegraphic Progress.—The Postal Telegraph Department is prepared, it is said, to lay on private wires between a place of business or private establishment and a postal telegraph office on reasonable terms. A rate of 7*l.* per mile per annum, over house or underground, or 5*l.* along a road, will rent a wire; 25*l.* will purchase a printing telegraph and battery; and 7*l.* 10*s.* per annum will cover the cost of the maintenance and repair of the apparatus, and even the supply of paper-ribbon on which the messages will be printed: 5*l.* 5*s.* will pay the clerks' services for issue, and a sum of 3d. for each message within the free limit.

The Visit of the British Association to Edinburgh.—A circular has been issued with reference to the visit of the British Association to Edinburgh in August next. The president-elect is Sir William Thomson, professor of Natural Philosophy in the University of Glasgow. The first meeting of the general committee will be held at one o'clock on Wednesday, August 2nd, and in the evening, at eight o'clock, the first general meeting of the Association will be held, when Professor Huxley will resign the chair, and Professor Sir William Thomson will assume the presidency, and deliver an address.

The Northern Architectural Students Society.—The first out-door meeting of the present summer session was held on Saturday afternoon last, the 10th inst. Permission having been granted by Mr. John Gibson, the architect, the members visited the new National and Provincial Bank in Newcastle-on-Tyne, now approaching completion. The members were conducted over the works by Mr. Glover, the clerk of the works, who took every pains to explain the construction and purpose of all parts of the building.

Birmingham and the "Irrigation System."—Birmingham has a "sewage difficulty," and the public works committee of the town council has recently been making inquiries respecting the irrigation system. The result is that the committee recommends that the system of disposing of the sewage by irrigation, already proposed, shall be adhered to. It is also recommends that the council shall purchase about 2,000 acres of land for this purpose, rather, it would seem, as an experiment on a large scale than as a final quantity.

The Manchester Abattoirs.—The foundation-stone of the new abattoirs in Water-street, Manchester, has been laid by the mayor. The contract for putting in the drainage and foundations has been executed by Mr. William Southern. Messrs. Bates & Co., of Droyladen, hold the contract for the erection of the superstructure. The North of England Iron Company are the contractors for the erection of the carcass market. The machinery will be supplied by Mr. Meiklejohn, of Dalkeith. Mr. Darbyshire, of Manchester, is the architect.

New Infirm Wards at St. Luke's.—The new wards for the aged and infirm poor of the Holborn Union in the grounds adjoining old St. Luke's workhouse have been opened. The wards allow a large cubic space to each inmate, are painted, lighted by large bay windows, and have ventilating arrangements. In order that the aged and infirm poor may be properly warded without climbing upstairs, a lift has been fitted in a shaft, and those arriving or going out are conveyed from floor to floor in it.

New Masonic Hall in Londonderry.—The Masonic Hall in Magazine-street, Londonderry, built at his own expense by the late Mr. Alexander Grant, after having for a time been in other hands, has recently become the property of the Masonic body in Derry, and has undergone thorough repair, having now been decorated in a style of ornamentation unsurpassed in any similar edifice in Ireland.

Metropolitan Police Returns.—The usual annual criminal returns of the Metropolitan Police have been issued in a printed form. It is notable how comparatively close the numbers of those taken into custody, convicted, and acquitted run in successive years. Thus, in 1869, 72,951 were taken into custody, and the number in 1870 was 71,269. The number acquitted in 1869 was 779, and the number in 1870 was 780. The number convicted and sentenced in 1869 was 3,291, and in 1870, 2,855,—of course over and above those summarily disposed of or held to bail, the number of whom in 1869 was 40,408, and in 1870, 43,338. Of those tried and convicted in 1870, 2,238 were males and 617 females. Of the whole, 1,579 males and 424 females could read only or read and write imperfectly; 493 males and 186 females could neither read nor write; 164 males and 6 females could read and write well; and 2 males and 1 female had superior instruction

Old Bond-street Gallery.—The summer exhibition here consists of 531 pictures and drawings. Without being able to give any great praise to the collection as a whole, we may point to works by Charles Jones (22), H. T. Dawson, Jun. (35), E. J. Westbrooke (36), Carle Bauerle (41), H. Dawson (45), John Morgan (67 and 223), Jules Ruinart (86), E. G. Sentzenich (169), Lionel Smythe (218), Burfield (530), and a few others as deserving a visit.

Wire Tramways.—We are informed that the whole of the capital of the Wire Tramway Company has been privately subscribed, the object being to carry on and extend the system of wire-rope transport, which is now making progress. Orders have been recently received from the Government for lines to carry gunpowder at Purfleet and salt in the Punjaub. It is in operation in several mines, at home and abroad.

School of Art for Lewes.—The subscriptions that have already been promised for a School of Art in Lewes give great hopes that Messrs de Putron and Parsons will succeed in carrying out the object they have in view. The site which is proposed for the school is that now occupied by the fire-escape, at the further end o Albion-street; and it is regarded as a central one, and as convenient as could be desired.

A Door Lock, we hear, has been invented which rings a bell and lights a taper on the instant that any one attempts to pick it; or it may be so arranged as to produce the lights only, should any one let himself in late at night.

The Horticultural Society's Conversazione.—The Duke of Buccleuch's *conversazione* will be held in the Conservatory on Tuesday evening, July 4th. It is confined to members and some specially invited guests.

The Town Theatre, Breslau, has been entirely destroyed by fire.

TENDERS

For new warehouse, in Farringdon-street. Mr. T. Chatfeild Clarke, architect:—

Ennor	£2,878 0 0
Myers & Sons	2,804 0 0
Henshaw	2,695 0 0
Hawtrey & Son	2,667 0 0
Brass	2,633 0 0
Conder	2,618 0 0
Browne & Robinson	2,595 0 0
Merritt & Ashby	2,512 0 0
Colls & Sons	2,340 0 0
Hill, Keddell, & Waldram	2,274 0 0

For Prince of Wales Assembly Rooms, Ramsgate. Quantities by Messrs. Pain & Clark:—

Matthews	£10,833 14 7
Harrison & Son	10,500 0 0
Sollitt	10,290 0 0
Hill, Keddell, & Waldram	9,880 0 0
Kelly	9,349 0 0
Hayward	8,276 0 0

For erection of new Crescent School, Margate, for Mr. John Dentry. Mr. Alfred Drewe, architect. Quantities by Mr. Edward J. Cumber:—

		Roads, Fence, Drainage, &c.
Wagstaff & Son	£7,798	£477
Paramor & Son	7,600	550
Perry & Co.	7,649	439
Pritchard	7,575	536
Wigmore	6,755	695
Eaton & Chapman	6,332	493
Potter	6,299	496
Cooke & Greene	6,279	449

For the erection of new farmhouse and offices, at Haddenham, for the Right Hon. the Earl of Hardwicke. The clerk of works on the estate, Mr. Brant, architect:—

Thoday	£1,725 0 0
Freeman	1,650 0 0

For sheds and chimney-shaft, at Stratford, for the Imperial Chemical Company. Mr. F. Allen Edwards, architect:—

Chessum	£1,270 0 0
Wigmore	1,203 0 0
Whittick	1,185 0 0
Lovejoy	1,161 5 0
Ebbs & Son	1,132 0 0
Williams & Son	1,067 0 0
Aitchison & Walker	1,066 0 0

For the erection of Parochial Schools, at Heigham Norwich. Mr. Edward Power, architect. Quantities supplied by Mr. Peebles:—

	No. 1. Girls & Boys.	No. 2. Infants.
Rutland	£1,730 7 7	£762 7 0
Wright	1,085 0 0	478 0 0
Browne & Bailey	1,064 0 0	469 0 0
Hawes	1,054 0 0	490 0 0
Wilkin & Curtis	950 0 0	431 0 0
Nelson	941 15 0	413 0 0
Young	838 10 0	420 0 0

For alterations and additions to a house and shop, No. 30, Church-street, Woolwich, for Mr. James Emptage. Messrs. W. Gosling & Son, architects. Quantities supplied:—

Blackmore & Morley	£393 0 0
Booker	392 0 0
Waterson & Co.	368 0 0
Vickery	335 0 0
Daniel	326 0 0
Jory	295 0 0

For additions to chapel, new schoolroom, &c., Blisworth. Mr. T. Heygate Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

	Chapel and School.	Cottage.
Shakeshaft	£1,200 0 0	£200 0 0
Wheeler	1,198 7 0	184 7 0
Smith, Bros.	1,177 0 0	197 0 0
Adams	1,038 19 8	186 0 9

For alterations and additions to No. 184, Brompton-road, for Messrs. Cox & Yeman. Mr. J. T. Pilditch, architect. Quantities by Mr. T. R. Parker:—

Timms	£1,950 0 0
Rhodes & Roberts	1,820 0 0
Stimpson	1,797 0 0
Matthews	1,793 15 0
Stephenson	1,659 0 0
Morsman	1,650 0 0
Leggett	1,356 0 0
Lacy & Torkington	1,200 0 0

For sundry alterations at 44 and 46, Kennington-road, for Mr. J. Davis:—

Lenoard	£348 10 0
Badcock	304 0 0
Wilcox	299 0 0
Bulford	293 0 0
Rabey	277 0 0
Neal	274 10 0
Smith	270 0 0
Jeffery & Dickinson	267 0 0
Teed	248 0 0
Francis & Jerrard	241 0 0
Wyatt	230 0 0
Basham, Brothers	229 0 0
Buchan	221 0 0
Windows	218 12 10
Pearce	197 0 0
Pitcher (accepted)	194 0 0
Crook & Wall	191 10 0
Rooney, Brothers	189 0 0
Luscomb	165 0 0

For the first portion of new farm-buildings, cottages, and farm-houses, on the Grange estate, Hants, for the Right Hon. Lord Ashburton. Mr. John Cox, architect. Quantities furnished by Mr. Sidney Young:—

Roberts	£13,199 0 0
Patman & Fotheringham	12,994 0 0
Kimberley	11,398 0 0
Longmire & Burge	11,321 4 0
Colls & Son	10,877 0 0
Davis & Co.	10,328 15 11
Brass	10,312 0 0
Cooke & Green	9,920 0 0
Crossley	9,597 0 0
Bull & Son (accepted)	9,363 4 7

For additions to Holmwood, Beckenham, Kent, for the Rev. T. Lloyd Phillips. Mr. John Cox, architect. Quantities furnished by Mr. Sydney Young:—

Harris & Hooker	£1,479 9 11
Burrows & Brooker	1,130 0 0
Gascoyne & Son	1,117 0 0
Crossley	958 0 0

For alterations to the Red Lion, York-street, St. James's, for Mr. Richard Goodwin. Mr. William Henry Rawlings, architect:—

Sykes	£756 0 0
Reynolds	750 0 0
Moultrie	746 0 0
Tidman	700 0 0
Wagner	680 0 0
Perkins (accepted)	675 0 0

For the erection of a shop, at 340, Essex-road, Islington, for Dr. Grey. Mr. Kirby, architect:—

Chalcroft	£185 0 0
Berresford	164 0 0
Rooney, Brothers	155 0 0
Greeney	150 10 0

For new warehouse, at Bermondsey, for the Directors of the Leather Warehouse Company, Mr. Elkington, architect:—

Henshaw	£1,675 0 0
Conder	1,591 0 0
Browne & Robinson	1,565 0 0
Gammon & Sons	1,527 0 0
Little	1,498 0 0
Coleman (accepted)	1,429 0 0

For alterations and additions to the Cottage, Halliford, for Mr. P. Dunn. Mr. R. L. Curtis, architect:—

Dover, Dowell, & Co, (accepted)	£300 0 0

For supplying and laying stoneware and iron pipes, of various sizes, fixing hydrants, &c., for the Dorking Water Works Company. Messrs. Jenkin, Trathan, & Triscott, engineers:—

Deville & Co	£4,054 11 9
Anderson & Dunmore	4,009 0 0
Aird & Sons	3,503 7 8
Smith & Son	3,411 16 0
Painter	3,059 0 0
Mills & Co.	3,009 2 8
Marshall	3,000 0 0
Ford	2,829 6 0
Stevens	2,761 12 5

For the erection of farm-buildings, at Haddenham, for the Right Hon. the Earl of Hardwick. The clerk of works architect:—

Feast	£1,175 0 0

For the whole work of the Howden Market-hall Company, Limited. Messrs. M. E. Hadfield & Son, architects:—

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Levitt	1,899 0 0
J. & W. Shaw	1,860 0 0
Alcock	1,749 0 0
Lenelais & Son (accepted)	1,734 10 0

For villa residence, Wood-lane, Highgate, N. Mr. J. W. Reed, architect:—

Chalcroft	£1,557 0 0
Ebbage	1,492 8 0
Heath	1,425 7 0
Garrud	1,358 0 0
Goodman	1,348 0 0
Cooke	1,340 0 0
Sale	1,258 0 0
Newton & Co.	1,239 15 0
Ball	1,175 0 0
Hawkes	1,170 0 0
Robbins & Co.	1,167 0 0
Nibblett & Sons	1,138 0 0

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Ellams	1,475 0 0
Bennett	1,470 0 0
Cooke	1,466 0 0
Lea	1,461 0 0
Wood (accepted)	1,390 0 0

For new wing to Boden Hall, Cheshire. Mr. Geo. B. Ford, architect:—

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Dale	815 0 0
Poole (accepted)	750 0 0

For enlarging schools, at Crewe. Mr. Geo. B. Ford, architect:—

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Bison (accepted)	180 0 0

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Docwra	1,190 0 0
Landsbury	1,129 0 0
Holloway	1,067 0 0
Jeffery	1,050 0 0
Bloomfield	998 0 0
Pizzy	918 0 0
Acock	829 0 0
Patman	748 0 0

For bonded stores under St. Pancras Passenger Station, for the Midland Railway Company. Mr. J. H. Sanders, architect:—

Dover, Dowell, & Co. (accepted)	£1,614 16 0

For the erection of Police Station, at Sandwich, Kent, for the Justices of the County of Kent. Mr. Martin Bulmer, architect:—

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Styles & Son	2,625 0 0
Woodcock	2,590 0 0
Stiff	2,575 0 0
Harnett	2,544 0 0
Wise	2,528 0 0
Messrs. Denne	2,496 0 0
Johnson & Co.	2,424 0 0
Chamberlain & Ansell	2,388 16 0
Adcock & Rees (accepted)	2,376 0 0

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We are compelled to decline pointing out books and giving addresses.

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Dated th a 13th day of June, 1871.

J. A. BUCKLEY, Chief Clerk.

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